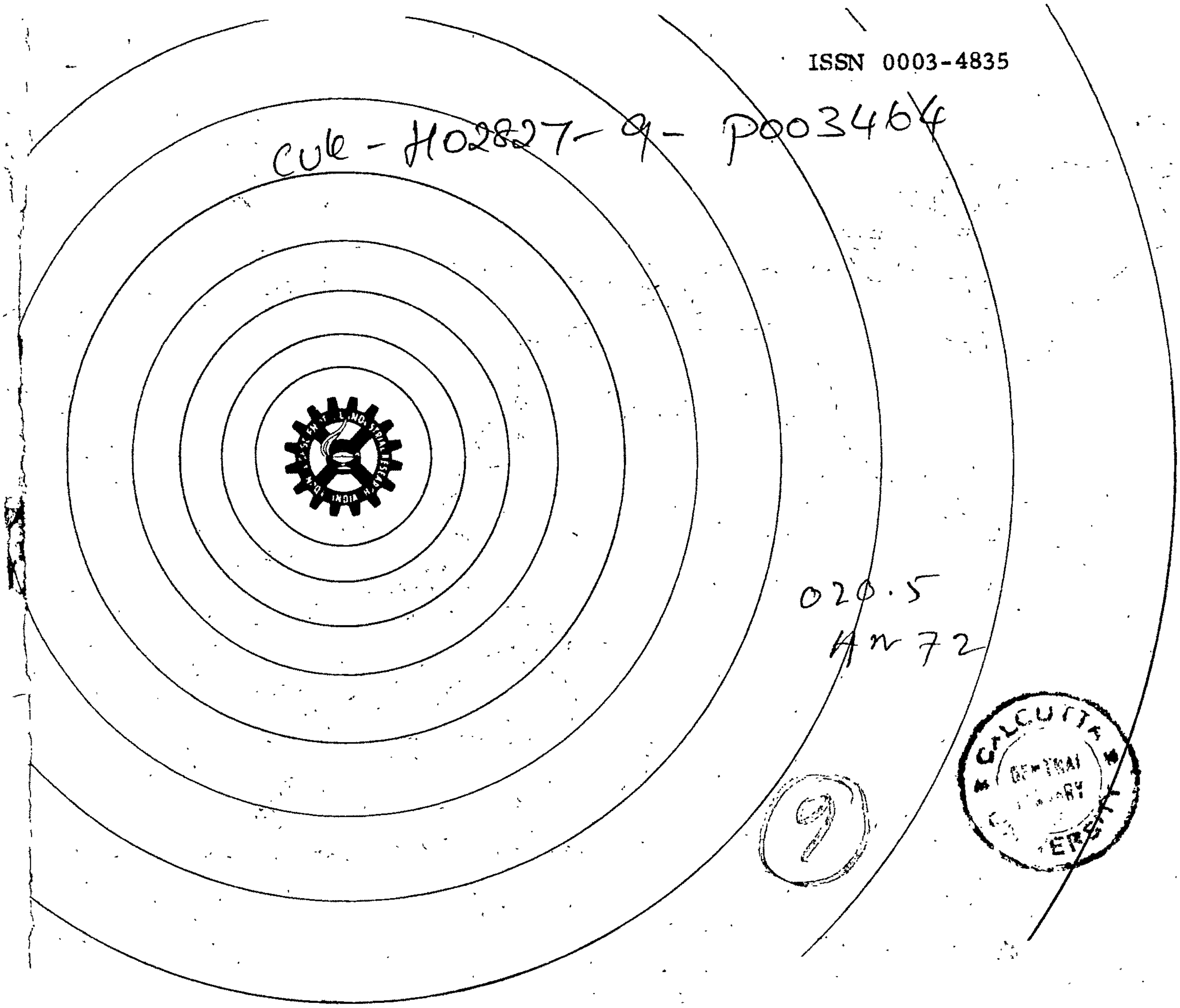
ISSN 0003-4835

Cul - H02827 - 9 - P003464



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annals of library science and documentation

INDIAN NATIONAL SCIENTIFIC DOCUMENTATION CENTRE DELHI - 12

VOL 22 NO 1 MAR 1975 1975

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ANNALS OF LIBRARY SCIENCE AND DOCUMENTATION

Annals of Library Science and Documentation is published by INSDOC as a quarterly. The dates of publication are 31 March, 30 June, 30 September, and 31 December.

Annals of Library Science and Documentation is a Medium for publishing original contributions in the field of library classification, cataloguing, bibliographic organisation, documentation techniques, mechanical methods of documentation, bibliographic standardisation, reprographic methods, etc.

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P3464

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Annual Subscription (India) : Rs.25.00
Other Countries : $15.00

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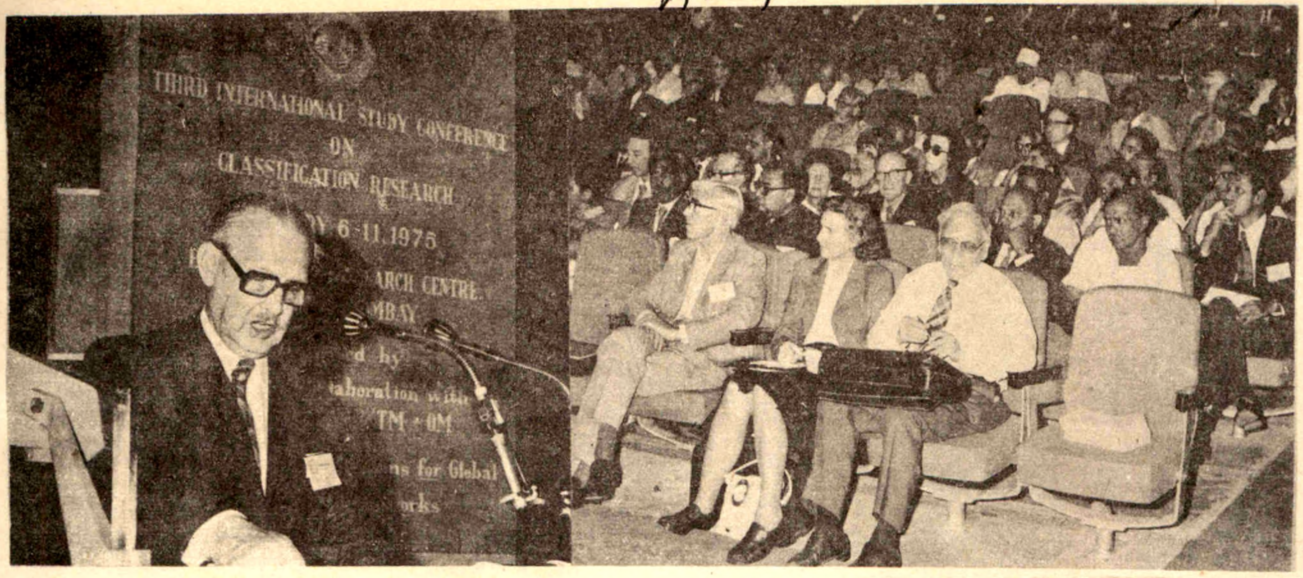

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EDITORIAL
THE THIRD INTERNATIONAL STUDY CONFERENCE ON CLASSIFICATION RESEARCH, Bombay, 6-11 Jan. 1975

The current year could have started hardly in a more promising way for us than the holding of the Third International Study Conference on Classification Research at Bombay. The Conference was organised by the FID/CR in cooperation with FID/LD and FID/TM & OM and co-sponsored by the Indian National Scientific Documentation Centre (INSDOC), Sarada Ranganathan Endowment for Library Science, and Unesco. It was hosted by the Bhabha Atomic Research Centre. The general theme was Ordering Systems for Global Information Networks, surely a much more broader theme than the subjects of the first two conferences at Dorking (1948) and Elsinore (1964).

Holding the Conference in India for the first time is of great significance. Ever since the Conference was announced classification research workers all over the world must had one particular thought in their mind which was quite evident from most of the large number of participants gathered at the lovely venue of the Conference. Everyone of the foreign participants was glad to come over to India. But there was a touch of poignancy in the thought that the Conference was being held in India at a time when the greatest contributor to classification research viz., Dr S. R. Ranganathan, was no longer there. Even at the opening session, speaker after speaker, very spontaneously referred to this great name and paid rich tributes. Mr Eric de Grolier who had worked with Dr Ranganathan in many international Committees and forums, including the first two study conferences, took the floor specially to pay his rich tributes. He said "Ranganathan was our guru, in the real sense of the term in which it is understood in this part of the world".

The inaugural session of the Conference was presided over by Professor Helmut Arntz, the President of the FID in the absence of Mr R Molgaard-Hansen. Dr R Ramanna, Director of the Bhabha Atomic Research Centre, in his inaugural address welcomed the delegates and stressed the importance of the theme of the Conference both from the point of view of information scientists and also information users at all levels. He specifically pointed out that, "to be really useful, the data or information made available should be precise and pin-pointed, reliable and timely. Besides, it should be available at a reasonable cost and effort. Development and setting up of such an information facility brings into consideration two important aspects of information handling, namely, (1) information ordering such as data structuring, classification, indexing etc. and (2) networking of information systems and services on local, national, regional and global scales. Each of these aspects raise numerous problems of their own and thus call for research and investigation in the field."

Dr A Ramachandran, Secretary of the Department of Science and Technology, also addressed the meeting. He mentioned the contribution of India in the field of Classification Research made largely through the efforts of the late Dr Ranganathan. Dr Ramachandran recalled that the idea of establishing a World System of Scientific Information, which has now come to be called UNISIST, was first mooted at an ICSU meeting held in Bombay in 1966. Hence, he felt, it was a happy augury that the UNISIST was supporting the Conference. Dr Ramachandran specifically referred to India's national information plan, the National Information System for Science

WORKSHOP ON PLANNING OF BRANCH INFORMATION CENTRES (BIC) IN CSIR LABORATORIES AND CO-OPERATIVE RESEARCH ASSOCIATIONS, New Delhi, 26-27 February 1975

The Workshop was organised by INSDOC with the objective of bringing together the information workers from the various units of the CSIR Complex and providing an opportunity to think and draw up plans for Branch Information Centres, in the context of the national information plan, which will be mutually compatible and also fit into the national plan. It was attended by over 60 participants and observers. Four plans, which have already been prepared, were presented at the Workshop as case studies. The plans were the (i) Food Science and Technology Information Service (FOSTIS) of the CFTRI, Mysore, (ii) Aeronautical Information Centre of NAL, Bangalore, (iii) National Information Centre for Environmental Engineering (NICEE) of the NEERI, Nagpur, and (iv) National Information Centre for Leather of CLRI, Madras. Apart from that 13 papers were also presented mostly by the senior members of the staff of INSDOC on various aspects of planning, questionnaire, services, equipment, etc. of a BIC.

It was generally felt that the combined resources available in the CSIR laboratories would constitute a large information base for science and technology and be a major component of the National Information System for Science and Technology (NISSAT), which the Department of Science and Technology was promoting during the Fifth Plan period.

The Workshop was inaugurated by Professor Nayudamma, Director General Scientific and Industrial Research. Professor Nayudamma, in his address, mentioned the role of information activities of the CSIR laboratories and the potentialities of INSDOC as regards abstractors, documentalists, information scientists and translators. While planning for information service, he stressed, it was necessary to identify the clientele who could be broadly grouped under three categories, viz. (i) research workers working in a laboratory, (ii) R&D staff of industries, and (iii) managerial and executive personnel. All these groups needed different types of information hence different types of services were needed for them. Stress has so far been given to document-oriented information, but now the stress should be given to information-oriented system. Dr. Nayudamma also emphasised that more capabilities for information handling should be developed in the CSIR laboratories. Finally, he urged that the plan of the BICs within CSIR should be critically examined and feasible recommendations should come out in the form of concrete proposals.

At the first technical session of the Workshop, presided over by Shri A. Rahman, Chief, Planning Division of the CSIR, Professor A. Neelameghan (DRTC) presented a paper on 'The proposed plan for a National Information System for Science and Technology'. The other technical sessions were presided over by Shri. Y.R. Chadha, Chief Editor, Publications and Information Directorate, Professor A. Neelameghan, Shri M. S. Dandekar (INSDOC), and Dr. G. K. Seth (NEERI). Papers dealing with the various aspects of the organisation, services, operation, manpower requirements, survey techniques for the determination of the needs and resources etc. were presented at these sessions. Shri T.S. Rajagopalan's paper on the 'Organisation of Information grid within a branch' gave a comprehensive picture of the subject areas in which BICs could be developed, organisation and working of a BIC, the linkages of a BIC, acquisition policy, etc. The papers presented and the discussions that followed gave together a complete picture of the functions and objectives of a BIC within the NISSAT framework. All the papers presented at the Workshop were prepared under the general guidance of Shri S. Parthasarathy (INSDOC). He also guided the discussions in a very fruitful manner.

At the concluding session of the Workshop a number of recommendations were made for implementation and consideration of concerned agencies. Some highlights of the recommendations are: Practical plans for BICs are to be prepared for the period 1975-76 to 1978-79 by the different CSIR laboratories. A plan of action for 1975-76 is also to be submitted, indicating the minimum additional resources required and the programmes to be completed within this period. For conducting the preliminary survey of finding out the existing resources, user's requirements, etc., the guidelines discussed at the Workshop may be followed. One recommendation was on the immediate need for training of scientists and information workers in data management, information analysis, and computerised information handling. The Workshop also recommends that each of the proposed BIC may start at least one new service during this year such as data bank, R&D management information, SDI service, and information analysis with the existing capabilities.

A SHORT COURSE ON ABSTRACTS AND ABSTRACTING, 2-5 January, 1975

The S H P T School of Library Science of the S N D T Women's University, Bombay organised the course in collaboration with INSDOC. The four-day course, from 2nd to 5th January 1975, was the fourth in the series of Extension Course organised by the School from time to time. The course on Abstracts and Abstracting was intended for working librarians and information works who have to write abstracts or prepare abstracts bulletin as part of their work.

Apart from presenting the ground rules, and discussing the various guiding principles, techniques and standards available for the preparation of abstracts and abstracts bulletin through lectures, the Course had a number of demonstration, practical, and discussion sessions to emphasise the practical aspect of abstracting work.

Kumari Vidyut K Khandwala, University Librarian and Head of the S H P T School of Library Science had planned the course and also acted as its director. The lecturers were T N Rajan and B Guha (INSDOC), Dr B Anderson (Bombay University), Dr V A Kamath and M K Raghavendra (BARC). M K R Naidu, Deputy Librarian of the S N D T Women's University was the course coordinator. Inspite of the short notice the number of applications for participation was quite large and it was not possible to take more than 45 participants. The students of the S H P T School also attended the course. The participants came from different organisations in and around Bombay. They represented a good cross section of the corporate information users like technical colleges, research institutions, pharmaceutical laboratories, industries, government departments, etc.

The Course had a gracious inauguration by Smt. Sharda Divan, Vice-Chancellor of the S N D T Women's University. Shri S Partnasarathy, Scientist-in-Charge, INSDOC also addressed the participants. Professor A Neelameghan of DRTC, Bangalore, delivered the valedictory address at the concluding session.

The most enthusiastic response to this Course from the library and information workers of Bombay very clearly indicated that there is a genuine need for such short term courses on specific areas of information work. To put accros the latest ideas and techniques to workers who are already in the field such courses are of immense help. However, for extending the benefit to larger number of workers, such courses should be organised periodically in different parts of the country. It was felt that this should be possible if the library schools in different parts of the country could organise such courses in collaboration with a national organisation like the INSDOC.

B. Guha
Editor

ON SOVIET NATIONAL INFORMATION SYSTEM

B Kamala Rao
INSDOC, New Delhi-12

Mrs B. Kamala Rao attended the UNIDO-Inter Regional Training Programme for Industrial Information Officers and Documentalists, held in Moscow from 4 September to 12 November 1973. The present communication contains extracts from her unpublished report, bringing out only certain aspects of the Soviet information system, especially relating to patent information, standard information, agricultural information, and medical information.

Introduction

The nationanal information system in the Soviet Union, which now attracts the attention of all users of information and planners of information services alike in all countries irrespective of their socio-political structure, has-been evolving itself since 1921. Agencies like the Central Inter-departmental Commission of Acquisition and Distribution of Foreign Literature (KOHINOLIT) and the Bureau of Foreign Science (BINO) were organised in 1921. Since the early thirties, specialised information centres, called Bureaux for Scientific and Technical Information started coming up. The establishment of such Bureaux in a number of important branches of industries took the inevitable turn. Since 1945 Soviet planners started thinking in terms of an integrated national system wherein the various components could be interlinked.

As a first step towards this integration process, the Institute of Scientific Information of the Academy of Sciences-USSR was established in 1952 by a decree of the Council of Ministers. Later, the same institute was converted into the present All-Union Institute of Scientific and Technical Information (Vsesoiuznyi Institut Nauchnoi i Technicheskoi Informatisvi-VINITI). In 1958, by another decree, the State Public Scientific and Technical Library (Gosudarstvennaya Publichnaya Nauchno-Technicheskaya Biblioteka SSR-GPNTB) was set up.

By the beginning of the sixties most of the information agencies, were set up and then followed a period of consolidation, integration, and apportionment of duties and responsibilities between the various components. By 1972 this process was complete. The whole system, now, functions under the guidance of the State Committee for Science and Technology of the Council of Ministers (Gosudrastvennyi Komitet to MSSSR po Nauke i Tekhnike).

The scientific and technical information system in the USSR is comprised of five categories of agencies, viz., the All-Union institutes, the central industry-oriented institutes, the Republican Centres, the Regional or territorial institutes, and the local agencies. There are twleve All-Union institutions covering various subject areas, special types of documents or devoted to special functions. Thus, apart from the well known All-Union institute the VINITI, there are institutes for information in Agriculture, Medicine, Building and Architecture, Social Sciences, Patents, Translations, scientific and technical library, exhibition of economic achievements, etc.

The VINITI

Undoubtedly the most well known and the biggest All-Union institute is the VINITI. An impression of its phenomenal growth is available from the fact that in 1952 it started with 150 workers but at present it employs 2500 workers and an additional staff of 1700 in its huge printing complex.

Among the activities of the VINITI, the publication of the Referatinyi Zhurnal (RZ) is too well known to need any elaboration here. Suffice it would be to mention that in 1972 the RZ covered about one million items from 16,000 journals, and 6000 serials and also covered 18,000 patents and 7,500 books. The comparatively less known services and publications are mentioned below:

1. Express Information Bulletin.

Express Information is a unique current-awareness and translation service of the VINITI. These bulletins are brought out to alert the specialists to the most important discoveries reported in their respective fields and published in foreign language journals. Each bulletin carries abridged translations of five to eight important articles. They are presented usually within a month of their appearance in the primary periodicals. At present the Express Information appears in 78 series on problems of topical interest in subjects like , Astronautics and Missile Dynamics, Computer Technology, Automatic control of production processes, synthetic high-polymer materials, radio engineering and electronics, oil production, railway transport, ferrous metal industry and so on. Annually, 48 issues appear on each topic. As each one contains 5 to 58 digests of articles, reports, patents etc, about 300 important articles are thus being selected and brought to the notice of the specialists, in each of the fields.

2. Advances in Science and Technology (Itogi Nauki i Technology)

The VINITI publishes exhaustive reviews on topics of primary importance in various fields of science and technology entitled as 'Advances in Science' and 'Advances in Science and Technology'. These reviews are compiled on the basis of abstracts published in the Referativnyi Zhurnal. Each of the reviews is appended with the citations of the abstracts. During 1972, 74 reviews were published on the following topics Astronomy, Automation and Radio-electronics. Biology, Chemistry, Geophysics, Industrial Economy, Machine Building, Mathematics, Management, Mechanics, Metallurgy, Transport and Space Research.

3. Signal Information (Signalnaya Informatsiya) Bulletins

Signal Information Bulletins, published from VINITI are classifed bibliographic indexes in different sections of physics, chemistry, and technology only . This current awareness service was started in 1966. These are indexes for a few dozens of most productive journals, published in Russian, English, German and French languages. These are aimed at providing expeditious services, within a month of their publication. In 1972, fifty five such series were published. These are issued monthly, cumulated annually and provided with cumulated author index. In chemistry and chemical technology, these bulletins are being issued as fortnightlies in 38 series. These bulletins have the bibliographical parts which give the full title of the article in the original language, arranged alphabetically by the title of the journals and provided with author and subject indexes which are permutation indexes of key words in context. 'Signal Information' is published on topics like Automation and Radio Electronics, Telemechanism and Computer Mecanism; Electronics - its applications and Radio technology, Particles and Fields , Electrochemistry and Electrochemical Products etc.

PATENT INFORMATION

Patent information is organized as a specialized component of the national network of scientific and technical information and serves the users' needs, at different levels. The patent information system has been developed to:

1. organize patents files to ensure effective use;
2. organize the current notifications of authors' certificate and patents granted in the USSR and other countries;
3. provide reference services on Soviet and foreign patent information, and
4. disseminate the patent information in the country.

The Committee for Inventions and Discoveries of the Council of Ministers of the USSR is vested with the responsibility of organizing the national patent information services. The Committee accomplishes its functions through the Central Institute of Patent Information and Technico-Economic Research (TSNIIPI), The All -union Patent-Technical Library (Vsesoiuzneya Patentno teknicheskaya Biblioteke - VPRB) and the Patent. All the three organizations function in full cooperation and their functions are specified in the totality of the system.

The TSNIIPI is responsible for processing and publishing of patent information materials, development of methodologies for improving patent information system like that of mechanization and automation of patent information processing and guiding the other patent information agencies at different levels.

The VPRB, being a repository of patents, collects information on scientific, technical, legal and economic aspects of patents and authors' certificates which are being issued all over the world. The state patent fund consists of 50 million units of storage, including duplicate copies, out of which 10 million are domestic and foreign descriptions of inventions.

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ON SOVIET NATIONAL INFORMATION SYSTEM

The Patent is an institution, responsible for offering specialized services like building up of industry oriented and territorial patent document collections, information services for patent licensing, patent purity studies and supply of reprints.

Organisation

The objectives of the patent information sub-system are achieved by organizing sectorial and local collections of patent specifications. These collections are set up under the information patent units of enterprises and organizations. At present, there are 600 sectorial and 30 regional information agencies which have filed the copies of patent documents, mostly on microfilms. These files serve as depositories of Soviet and foreign inventions and are intended to provide copies on request. All the files are regularly updated. The regional centres have more comprehensive collection than the sectorial collections and are intended for examination of the patent irreproachability of the newly developed products and processes. The sectorial and local patent funds are maintained in the biggest industrial and economic centres and in the leading R & D organizations, or enterprises of the concerned industry, respectively. All these agencies publish the patent documents in their specific area, process patent information files, conduct all kinds of patent searches and supply the copies of specifications on request.

Publications

As the Central Institute for Patent Information and Techno-Economic Studies (TSNIIPI) of the Committee for Inventions and Discoveries is responsible for dissemination of patent information it issues the following publications.

1. Discoveries, Inventions, Industrial Designs and Trade Marks bulletin, a weekly (48 issues per year). The information on legal protection aspects of all the inventions which are registered in the USSR, is published in this periodical, within 3 months of the registration of the data. The annual index to this bulletin contains numerical, systematical and nominal indexes.

2. Implemented Inventions is a special publication of papers on the implemented domestic patents. The information on foreign inventions is being disseminated after translating from foreign patent bulletins into two series, one as Invention Abroad Series and the other as Bibliographic Series.

Invention Abroad Series (Izobretenija Za Rubezhom)

The original patent claims of industrially advanced countries, namely, Great Britain, USA, France, West Germany and Japan, which are published in their official patent bulletins, are abstracted and translated into Russian, systematized according to the International Patent Classification and published with their drawings as Invention Abroad Series. Excluding those in Japanese, all the patents published in other languages are printed on the verso of the page which contains the Russian translated version. Each page of an issue contains four cards - 144 mm by 101 mm dimensions - which contain the bibliographic data, summary of the invention and drawings wherever they are available. These cards can be directly used in R & D organizations or industrial enterprises for building up of their information card files. Since 1972, the Invention Abroad is published fortnightly, and contains 33 sections of topical issues. These bulletins are also issued as separates along with the integrated single series. Some of the topical issues are: Agriculture, Food Stuffs, Tobacco, Consumer Goods, Rolling, Casting, Powder Metallurgy, Transportation, Ships and Other Water Borne Vessels and Related Equipment, Aeronatutics, Aviation, Astronautics, Organic Chemistry, Engines and Pumps, Computing, Data Storage, Electrical Communication, etc. An index is provided with each group and as a separate also.

Bibliographic Bulletins of Patent Documentation

The Inventions Abroad abstracts are complimented with two monthly bibliographic bulletints. One of these two Bibliographic Bulletin of Patent Documentation covers the published information from 15 countries which include socialist countries, Australia and all the European Countries other than those covered in the Inventions Abroad. The second bulletin contains the information, published from African and Malagasi Union, United Arab Republic India, Iran, Iraq, Cuba, Morocco, Pakistan, Sri Lanka, Syria and Turkey. Every issue contains basic bibliographic data on inventions in the original language and a Russian translated denomination of the invention. The entries in these bibliographies are arranged by the eight major sections of the International Classification of Inventions.

Problems of Inventive Activity (Voprosy isobretatel' stva).

The research work carried on improving the patent informatin system is published in this journal. The experiences gained in patent licensing work by the R & D organisations and enterprises, the legislatures in the field of inventive activity, and reviews and abstracts of the published patent lterature find place in this.

5. Discoveries in the USSR Yearbook.

All the new achievements in natural, exact and technical sciences, specialised industry, agriculture and health, which have been approved and formally recognized as discoveries by the Committee for Inventions and Discoveries are published in this year book.

Further, the institute publishes some centrally prepared reference and retrieval tools to the patent collections of different countries. They are useful in handling patent collections at enterprises and other information organizations. Some of them are:

1. Annual Patent Index of Original Applications of advanced countries like Great Britain, West Germany, Japan etc.

2. Special Indexes on legal status of patents of some advanced countries.

3. Annual and Special Indexes of Legal Status of Patents, 7 volumes. This is also microfilmed in 11 reels and supplied to the Central and Territorial Information Centres.

4. Special Indexes of Corresponding Patents of countries like UK, USA, France, West Germany etc. are tools for retrieving the other corresponding patents through their numbers. These are like the patent concordence published by the Chemical Abstracts Services.

5. Summary Indexes to the Patent Collections of Developing Countries are supplemented with current periodic bibliographical bulletins. The summary Indexes of Finland, Cuba, Pakitan, India and Morocco are provided with one main, systematical, and two auxillary - author (patent holder) and numerical indexes. The abstracts journal of VINITI, the Referativnyi Zhurnal reports the abstracts of inventions, specifications. During 1972, about 180,000 patents and specifications were cited in 170 series of this journal. In certain fields, like Electrical Communcations the journals cover as many as 60 percent of all the patents issued and in the fields, such as Electronics, Radio, Engineering Machine Building, the coverage is upto 40 percent of the issued patents. Patent abstracts are also prepared by some central information agencies like those in the fields of constructions, Metals and certain branches of engineering.

INFORMATION OF STANDARDS AND SPECIFICATIONS

The All-Union Research Institute of Scientific and Technical Information, Classification and Coding (Vsesoyuznyi Nauchno-Issledovstel-ski Institut Technicheskoi Informatsii, Klassifikatesii i Kodirovania - VNIIKI) of the State Committee on Standards of the USSR Council of Ministers, was established in 1964 to organize a subsystem of norms and standards and to integrate it with the State System of Scientific and Technical Information. It has to organise a national standards reference service and coordinate research activity on classification and coding systems. It is responsible for the development of scientific and technical terminology in Russian and for the classification of products of the USSR. Maintenance of specific standards for the industrial products and agricultural and metrological standards and specifications through various media of information is one of the important functions of this institute.

To fulfil these objectives, the All-Union Standards Archives, builds up the technical normative documents and the All-Union Research Centre for Standard Reference Data, maintains a file of standard reference data on physical constants, and properties of substances and materials. The library is regularly enriched with the collection of standards and specifications issued from all the member countries of the International Standards Organization (ISO), in addition to the 50 year collection of the standards of the whole world. These are maintained on computer files.

Publications

On stock taking and registering of all the domestic and foreign technical normative documents, information publications such as indices, abstracts and SDI publications are being issued.

1. Express Standard information bulletin is issued five times a month. Annually about 10,000 entries in the fields of quality control and metrology are brought to the notice of the users.

   Brochures on specialized standard information are published in two series, one contains the information on the USSR standards and the other on the foreign standards.

2. Index of the USSR State Standards is a monthly index of the state standards.

3. The Information Index of Standards is a publication on standardization and qualty control in production.

4. Information Index of Industry-oriented and Republication Standards and Technical Specifications is a quarterly publication on state certification of industrial products. The specifications of the products to which the state quality marks have been issued are described. This publication enjoys a circulation of about 10,000.

5. Metrology and Measuring Techniques is an annual publication, since 1972, in two parts; part one is devoted to the USSR metrological norms and part two is devoted to the foreign metrological normative information.

6. Review Information on Standardization, Metrology, and Quality Control in the USSR. Under this heading about 20 to 22 specialized

reviews on quality control and metrology are published each year.

7. Standardization and Quality Control in Foreign Countries is a monthly publication which deals with the recommendations of the International Standards Organization, problems of international standardization and national standard organizations, and the wrold news in standardization.

8. Review Information on Standardization, Metrology, and Quality Control in Foreign Countries describes the standardization practices adopted in different countries, systematized and synthesised into a review; 10 to 12 such advanced reviews on foreign normative information are published per year.

9. Information Index of Foreign Standards is a bibliographic catalogue of international standardization.

10. Year Book of Newly Registered Specifications contains the approved standards and specifications of complex industrial characters.

11. Annual Catalogue of Standards is a cumulated issue of the monthly 'Index of the USSR State Standards.

12. Ten Year Commulative Book of the USSR State Standards of last ten years (1960-70), recorded 170, 000 items of state standards in two parts. The first part is classified and arranged as per the state standards classification and the second is a numerical index part. Similarly, a Thirty Year Cumulative Book of the USSR Standards" also has been published.

Coordination

VNIIKI provides literary and bibliographic reference services to the collective and individual users, and supplies copies of normative documents. The microfilms of standards are supplied to the 56 regional centres of the USSR from where they are supplied to the enterprises and factories. Republic Standards Institutions are responsible for registration of the stndards of their regions. The quality control aspect is not the direct responsibility of these institutions. This institute directs the integrated and unified state system of classification and coding in the USSR. To promote the concepts of standardization, the institute organizes seminars, conferences, lectures, exhibitions and broadcasts in T.V., cinema, radio and the press.

AGRICULTURAL INFORMATION

The All-Union Institute of Technical Information and Techno-Economic Research in Agriculture (Vsesoyuznyi Institut Nauchnoi i Tekhnicheskoi Informatisy po sel's Kokhozyastvo). Though, VINTISH is under the Ministry of Agriculture, several associated aspects are managed by different ministries, namely, Ministry of Amelioration, Ministry of Technology, Ministry of Food Production and by different expert bodies, such as State Committee of Forestry. There are about 200 higher agricultural institutions, 500 expert stations, hundreds of educational and technical schools in the USSR. There are 49, 000 state and collective mechanized farms. The VINTISH was established in 1965 to provide information services and to conduct research on techno-economic aspects in the field of agriculture. In addition to VINTISH, all the ministries, higher educational institutions, technical schools and collective and state farms are served by their own local or institutional information bureaux. There is a unit in the All-Union Institute to coordinate all the information activities in the field. The information base is provided by the Central Scientific and Agricultural Library of the All-Union Lenin Academy of Agricultural Sciences. This is claimed to be the richest and biggest in the world with 130, 000 volumes and with 10 percent annual growth rate. The VINTISH functions in full cooperation with the Central Scientific and Agficultural Library. The Library provides bibliographic services and the All-Union institute provides reference services all over the country.

Publications

1. Abstracts Journal in Agriculture. The Institute processes 2, 000 journals published in 65 different languages. Since its inception in 1965 till 1970, abstracts were supplied in card form to different organizations from this institute. From 1970 onwards, abstracts are being supplied in journal form. By 1973, 22 series are published. It is proposed to supply the abstracts in 27 series from 1974 onwards. These series are issued in broad subjects like, Plant Cultivation, Cereals, Vegetable Crops, Animal Husbandry etc. As uaual to Russian practice, the edited panel abstractors' versions are used in the compilations. These are in more detail and lengthier (maximum of 3, 000 characters) than those published from VINITI with 1, 100 to 1, 500 characters. Longer abstracts are adopted to reduce the need of consulting the original and avoid the supply of copies of the original as much as possible. These abstract journals are either monthlies or fortnightlies. The media of currency is about 3 months.

2. Express Information is more selective from the foreign sources and is published in a single series. It is a weekly service with media of currency of about a month.

3. Foreign Inventions File. The Central Institute of Patents Information and Technico-Economic Research supplies the typed abstracts on cards. All the inventions which have some bearing on any field of

agriculture, such as, Agricultural Machinery, Mechanization of Agriculture, Tractors, Processing Equipment etc. are covered and these abstracts are published periodically. Similarly, the most important achievements in the field and the recommendations of the branches for introduction into practice are maintained on either edge notched or ordinary cards and published periodically.

4. Surveys and Reviews in Agriculture are similar to the Advances in Sciences Series published from the VINITI. These are compiled by the specialists of the institute and also by the outstanding specialists from any part of the country, in cooperation with the specialists in the institute. The topics are chosen in accordance with the approved 'State Plan in Agriculture'. About 120-150 reviews and surveys are published annually. Some of them are in the form of series and the others are of topical value.

5. Information Sheets for specialists are prepared by the Department of Analysis and Generalization of this All-Union Institute, from the project reports, dissertations, R & D and D & D and field trials reports, and from the other unpublished information sources. All the unpublished material is registered, after analysis and generalization, the 'Information Sheets' are prepared for publication and circulation.

INFORMATION SUPPLY AND METHODOLOGY IN AGRICULTURE

The dissending flow of information is only a part of the information supply in the Soviet Union. Studies are conducted to understand the consumer needs in agricultural fields. To make the agricultural information services productive, seminar weeks or days of information are organised as part of the agricultural information extension programme. It is claimed that since 1930, this activity is continously coordinated with the scientific extension services of the States, which are the result of continuous efforts of the agricultural collectivization programmes. At every step, efforts are being made to improve the agricultural information services, through production orientation, dissemination of information and administration of information services.

There are separate zonal institutions in each and every branch of agriculture, such as Zonal Institute of Animal Husbandry and Zonal Institute of Agronomy. There are agricultural information and extension departments in all the 15 Republics of the USSR which are administered autonomously. There are about 3,000 'Raions' (districts) in the USSR which are organized into 'oblasts' (groups of districts)' 'Oblasts' into 'Zonas' (Zones) and Zonas into agricultural areas of Republics. There are special scientific and technical bureaux and local information cells at the state and collective farm level for the information and to provide base for the upward flow, upto the All-Union Institute level. At this lower level, 4 to 8 persons are posted to study the supplied information, assess its utility to the particular farm and to put the useful information into practice. These local units are very powerful in the transfer of technology into production.

REFERENCE INFORMATION STOCK

Primary and secondary information sources, published all over the world are regularly scanned by a team of 50 specialists in the Central Agricultural Library. The diversified territorial agricultural information branches are unified by the central reference information stock through the use of standardized Rubricator which is a subject heading list. In agriculture each specialized institution takes the responsibilityof developing and standardizing the Rubricator. The information needs of a specialized institution are generally met by special collections whereas, the united reference stock, housed at the All-Union Institute and the Central Agricultural Library strives to provide generalized services such as, abstracting, SDI and express information services. At present, only the top ranking administrators and a few outstanding scientists are being served with SDI and Express Information bulletins.

ASCENDING FLOW OF INFORMATION

The results of field trials, theoretical studies practical experiments and the new techniques developed at the state or collective farms are summarised on cards and posted to the local information centres to be passed upwards, through all the intermediate organizations to the VINITISH. On the basis of these cards, Information Sheets are prepared at the All-Union Institute and circulated to the specialists.

AUTOMATION AND RETRIEVAL SYSTEMS

An automated retrieval system for all the fields of agriculture is under study since long and is proposed to be brought into operation from 1974. It is aimed at providing SDI services, retrospective searches and building a strong data fund for organizing mechanized bibliographic compilations and utilizing the abstracts in specific searches. Once the data base is ready, it is proposed to organise comprehensive reference services.

MEDICAL INFORMATION

Though, the All-Union Research Institute of Medical and Medico-Technical Information. (Vsesoyuzvyi Nauchnoissledovatalksyi Institut Meditsinskoii i Mediko Teknicheskoi Informatsii (VNIMI). had its origin in 1928, the information system in the health services came into existence, only in 1962, under the Ministry of Public Health of the USSR. This. leading medical information institute, guides and coordinates the activities of the net-work of more than 4,000 medical libraries and information departments of medical research institutes. This institute collects, analyses, generalises and publishes the "Medical Abstract Journal" (Meditsinskii Referativnyi Zhurnal), issues bibliographies, scientific reviews and express information bulletins of abridged translations of important foreign publications.

Organization of integrated information reference files and guidance in such activity, at various levels, that is various departments, groups and sectors of medical information, along with the development of UDC division 61, are some of the functions of this organization. Further, it takes the responsibility of working out on medical terminology, development of dictionaries of descriptors and scientific and technical popularization of medical knowledge. The two streams of information flow, one from the State Central Scientific Medical Library, the Republican, district and regional medical libraries; and the second, from the Departments of Scientific Medical Information in All-Union, Republican as well as divisions, bureauxes, sectors and groups of information at scientific research institutions, are organized into an integrated information flow which supplement each other. The pattern of general information supply is similar to that of agricultural information supply.

ARCHITECTURAL INFORMATION

The Central Institute of Information on Building and Architecture of the Academy of Building and Architecture of the USSR, serves as one of the All-Union institutes and was established as early as 1943. It organizes information services in the specific field and publishes an abstracting journal entitled "Building and Architecture" (Stroitel'sto i Arkitektura), an express information series , annotations on completed research projects, economic and statistical reviews, etc. The information support given to the building and architectural industry is on the same lines of that organized in agricultural and medical branches.

Information Flow

There is a continuous to and fro information flow between the higher level information centres and the grass-root level individual enterprises. The information institutes of higher level regularly supply bibliographic, abstracting, SDI, factographic information publications, patents, standards and data compilations, trade catalogues and information on R&D and D&D projects to the lower level agencies. At the local and enterprise level, the supplied information is supplemented with that from the journals and other sources, like that from the information sheets and cards. The project leaders scan and identify the relevant information which has to be incorporated into the local information files and for the onward transmission to the central information institutions. The selected articles are processed as desired, either by making an abstract, or a detailed digest, or indexed and incorporated into the information file, by the special information unit which is attached to the specific bureau. The abstracts are further duplicated on marginal punch cards and passed on to their central information institutions and to their collateral agencies which are working on similar topics. These find their way to the individual factories, and workshops, where there are no information units. Quick results obtained on solving a specific aspect of any problem are disseminated on the "Information Card". Similarly, "Information Sheets" are prepared on the basis of current R&D and D&D projects in hand, after analysing and generalizing the interim results and information cards. These are supplied to all the connected agencies. All these cards and sheets of current innovations are sent up to the central information institutions, where they are incorporated into their central subject file after semantically and algorithmically processing them. These cards and sheets also go to support the index files of individual factories, workshops, collective farms, hospitals, etc.

The ascending flow of information from the lowermost level to the central level is an important aspect of information transfer chain. Generally, the local information bureaux are housed in the biggest enterprise in that specific field, in the locality. Each Central Information Institute has many local information organs, depending upon the ramifications of the specific industry. For instance, there are 23 local information bureaux under the 'Central Information Institute of Light Industry' for various branches, like textiles, cotton, silk, leather, footwear etc. The local information bureau of 'Mosrentgen Plant' and the 'Skorokhod Shoe Factory' serve as links between the higher central information institution and lower individual factories. This type of to and fro flow is maintained in all the branches, including agriculture, health etc.

THE REPORT LITERATURE: PRODUCTION AND DISTRIBUTION IN THE U.S.A.

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The importance of report literature and the volume of it are brought out. The major report producing agencies of the U.S.A. and the nature of their reports are indicated. The tools available for the location and acquisition of such reports are also listed.

The ever increasing production and importance of technical reports surely merit an adequate attention of potential users. The present article attempts to focus on information regarding follow up of new reports and similar literature systematically and also attempts to throw light on different ways of distribution which are often complex.

What is a technical report

Under the term "technical report" we generally understand some information resulting from research and development activities, not published hitherto in a usual manner. In the sphere of scientific research the term "research report" is more common.

When research results cannot be published in any other manner than in the form of a journal article, this journal article too can be considered as a research (technical) report.~~too~~

Importance of reports

Some technical (research) reports are rather an interim communication pending a final publication. In many fields of research and development they represent a final communication and are a primary source of information.

Reports are produced in an enormous and still increasing quantity today, involving research and development activities in all branches. In view of these facts it is highly desirable that not only library and information workers but research workers themselves consult continually respective information sources and trace report literature related to their work. Such a direct approach can put one on an advance of 1-2 years before reports are cited in scientific journals and other publications. Moreover, when ordered by a library or a documentation centre from the distributing agency directly, further time saving is possible.

Report series codes

Reports are generally issued as a part of a series and designated by a combined code (alphanumerical designator). This code helps to identify the report, the issuing and/or the sponsoring agency. A useful manual for these purpose is the

> Dictionary of report series codes. 2nd ed. Edited by Lois E. Godfrey and Helen F. Redman. New York, Special Libraries Association, 1973, 645p. ISBN 0-87111-209-4 $ 24.50.

Among reports we often can meet the following groups:

1 Progress reports (or status reports) issued periodically as generated state-of-the-art reviews;

2 Contract reports concerned with a specific task under contract;

3 Final reports, the last reports in a series, summarizing results.

Provenance of reports

World's leading producer country of report literature is the USA. In this country reports are well referenced when resulting from research and development activities performed (or sponsored) by governmental agencies or done for these agencies under contracts. Distribution of report literature originating from governmental research is organized mostly on a commercial basis.

Obtaining reports from other countries than the USA can be difficult and usually entails long delay. The central U.S. distributing agencies, however, receive a considerable quantity of reports from Canada and from some of the European countries too. These reports are included in U.S. abstracting journals and are available together with technical reports translated into English.

U.S. report producers

A large production of report literature in the USA results from research and development activities within the country. A schematic outline of the total national research and development efforts has been given in the Appendix. The following pages give only a rough overview of leading Federal agencies concerned with research and development — the Department of Defence, N.A.S.A., Atomic Energy Commission, Department of Commerce and others.

Detailed information about all divisions and subdivisions of these Federal agencies and their complexity is given in the following publication:

> FEDERAL GOVERNMENT, A directory of information resources in the United States. National Referral Center for Science and Technology, Library of Congress, Washington, 1974, 416pp., $ 4,25.

The U.S. Department of Defense (DoD) with its Departments of the Army, Navy and Air Force carried out in 1973 about one fourth of all overall national and about 50 per cent of federally supported research and development activities. The scope of these DoD' activities is given by subject categories of the abstracting journal "Government reports announcements" (GRA) referencing the DoD publications released for distribution, and also by the "Thesaurus of engineering and scientific terms" published by the DDC as technical report AD 672 000.

The Defense Documentation Centre (DDC) is the central depository for documents resulting from research of all DoD divisions and subdivisions. The distribution for non-military users, however, is performed by the central federal distributor, the National Technical Information Service (NTIS) at Springfield, Va.

Publications: reports of all categories, proceedings of symposia, monographs, bibliographies etc.

National Aeronautics and Space Administration (N.A.S.A.) carried out in 1974 about 17 per cent of federally supported research and development activities. An idea of these activities are given by broad subject categories of two abstract journals "Scientific and technical aerospace reports" (STAR) and "International aerospace abstracts" (IAA), as well as by the Thesaurus published under NASA SP-7030 in the series Special Publications.

The NASA Scientific and Technical Information Division and the NASA Scientific and Technical Information Facility, (STIF) are responsible for acquisition and dissemination of worldwide aerospace information.

Publications: the abstracting journal STAR, technical reports, notes, and memoranda, contractor reports, conference proceedings, indexes, bibliographies, technical reprints, special publications, technical translations.

The NASA technology transfer. The NASA Technology Utilization Office, Code KT, Washington, is charged to promote widespread utilization of technological innovations resulting from the NASA programs. Publications issued for these purposes are: Technology utilization reports, technology utilization notes, technology handbooks, technology surveys, application notes, Tech Briefs (brief reports of recent innovations in nine categories) etc.

U.S. Atomic Energy Commission (AEC). The AEC participated with about 8 per cent at the federally supported research in 1974. Its task is to conduct research and development in the application of atomic energy for defense and for peaceful uses in medicine, industry, and agriculture, and it also sponsors large programs of basic research. The broad scope of AEC' activities is given by headings of the abstracting journal "Nuclear science abstracts".

The Technical Information Center (TIC), US AEC, is responsible for the following types of publications: technical reports, progress reports, summary reports, proceedings of meetings, progress reviews, monographs, bibliographies, three quarterlies etc.

U.S. Department of Commerce. Major research agencies and information sources in this Department are the National Bureau of Standards (NBS) (which includes the central agency distributing reports), the National Technical Information Service (NTIS) at Springfield, the Patent Office, the Environmental Science Services Administration (ESSA) and the National Oceanic and Atmospheric Administration

(NOAA). Under the ESSA are five important components: Coast and Geodaetic Survey, Environmental Data Service, Institutes for Environmental Research, National Environmental Satellite Center, and Weather Bureau.

National Bureau of Standards (NBS), Washington, is the nation's largest physical sciences and measurement laboratory. The NBS consists of the Institute for Basic Standards, the Institute for Materials Research, the Institute for Applied Technology, and the Institute for Computer Science and Technology.

Publications: Journal of Research of the NBS, Research Highlights, Monthly Technical News Bulletin and eight nonperiodical series. "Publications of the NBS" (under NBS Special publication 305 and supplements).

National Technical Information Service (NTIS), Springfield. NTIS, formerly Clearinghouse for Federal Scientific and Technical Information (CFSTI), is the central distributor of reports and other publications produced by federal agencies in science and technology. Since the Federal research programs require about two-thirds of the total tax-supported research effort, the Government promotes large-scale dissemination of unclassified scientific and technical knowledge developed through this research, in order to further the country's scientific and industrial progress. Thus the Government helps to accelerate research, to eliminate unnecessary activities and to reduce costs, to update production processes, to develop and to improve products.

There are about 800, 000 unclassified (unlimited) Government sponsored reports in the NTIS holdings available to the public, and about 60, 000 new items arrive per year. To inform potential users of these new documents, the NTIS publishes and sells on subscription the abstracting journal "Government reports announcements" (GRA) describing this research material produced by governmental institutions and by their contractors, i.e. by universities and colleges, industrial laboratories, etc.

U. S. Patent Office, publishes the "Official Gazette", weekly abstracts of current patents available. In 1974 the number of patents amounted to 80, 000 items.

U. S. Department of the Interior is concerned with the management, conservation, and development of the natural resources of the country. These resources areas include the public lands, minerals, fish and wildlife and parks, water and power development, and water pollution control.

Major information producers under this Department are the Bureau of Mines, the Bureau of Sport Fisheries and Wildlife, the Geological Survey, the Office of Coal Research, the Office of Saline Water, and the Office of Water Resources Research.

The scope of this article does not allow to give an exhaustive enumeration of all significant U.S. institutions concerned with research and development. It is necessary to consult the manual Federal Government mentioned earlier.

The following institutions, however, cannot be omitted in view of their importance in research and information activities:

National Science Foundation (NSF), Washington, strengthens basic research and science education in the U. S. through the awarding of grants, contracts, fellowships in sciences - to the extent of about 3 per cent of the federal research support (in 1974). Its participation at the federally supported scientific and technical information program is significant.

Environmental Protection Agency (EPA), Washington, with an expanded research program.

The Library of Congress, Washington, is a general reference and research library for public use as well as for the use of the Congress. With the exception of technical agriculture and clinical medicine, which fall within the scope of the National Agricultural Library and the National Library of Medicine, the Library of Congress collects material on all aspects of science and technology.

Its Library holdings include about 1 1/4 million technical reports originating from the major federal agencies such as DoD, NASA, AEC and others. Of special interest is the collection of reports of the World War II Office of Scientific Research and Development (OSRD). The Photoduplication Service of the Library of Congress is custodian of over 100, 000 scientific and technical reports released through the Publication Board of the Department of Commerce prior to June 1, 1961. The Library of Congress publishes "Information bulletin" (weekly), "Library of Congress publications in print (yearly) and other. The Science and Technology Division issues series of special bibliographies, federal directories etc. and cooperates in preparation of the "Guide to the world's abstracting and indexing services in science and technology" and other projects.

Smithsonian Institution, Washington, is an independent institution devoted to public education, basic research and national service in science, the humanities, and the arts. Resources for research and information: collections, libraries, laboratories.

The SSIE - Smithsonian Science Information Exchange is a clearinghouse for information on scientific research in progress from all available sources: Government, industry, and private. The aim of the SSIE is to eliminate unnecessary duplication of research and development activities.

The Superintendent of Documents, U.S. Government Printing Office - SOD/GPO, Washington, executes the printing of publications for every establishment of the Federal Government and distributes them partly too. To inform the public of new documents, the SOD issues the "Monthly catalog of United States Government publications".

Producers of a large quantity of reports are the universities & colleges and industrial firms working under contracts and grants for the above Federal agencies. In 1974 about 70 per cent of federal research and development were performed in this way, outside the Federal complex, by universities and colleges 16 per cent, by other non-profit organizations 4 per cent, and by industrial firms 50 per cent.

Abstracting journals announcing reports and other publications of governmental agencies
Subject categories of these abstract journals

Reports and documents originating from Government agencies are abstracted by three basic journals: Government reports announcements (GRA), Scientific and technical aerospace reports (STAR) and Nuclear science abstracts (NSA). These have a common index "Government reports index" (GRI). By means of this index the huge report production can be followed with a minimum of effort. A part of governmental reports and publications is announced by the "Monthly catalog of United States Government publications", i.e. those which are printed and to some extent sold by the U.S. Government Printing Office.

1. Government reports announcements (GRA).
Commerce Department, National Technical Information Service, Springfield, Va. Semimonthly.
Subscr. $ 70,00 a yr., $ 15,00 additional for foreign mailing. Avail. on subscr. from the NTIS, Springfield, Va. 22151.

It describes documents offered for sale by the NTIS: reports, translations, conference and symposia proceedings, monographs, bibliographies etc. originating from the DoD (under a code beginning generally with "AD"), from different civil agencies (under an accession number beginning generally with "PB" - public board from the NASA and others. The GRA includes about 25,000 new items in a year.

Subject categories of the GRA (subdivisions omitted)

01	Aeronautics
02	Agriculture
03	Astronomy and Astrophysics
04	Atmospheric Sciences
05	Behavioral and Social Sciences
06	Biological and Medical Sciences
07	Chemistry
08	Earth Sciences and Oceanography
09	Electronics and Electrical Engineering
10	Energy Conversion (Nonpropulsive)
11	Materials
12	Mathematical Sciences
13	Mechanical, Industrial, Civil, and Marine Engineering
14	Methods and Equipment
15	Military Sciences
16	Missile Technology
17	Navigation, Communications, Detection, and Countermeasures
18	Nuclear Science and Technology
19	Ordnance
20	Physics
21	Propulsion and Fuels
22	Space Technology

2. Scientific and technical aerospace reports (STAR).
National Aeronautics and Space Administration, Scientific and Technical Information Office, Washington, semimonthly abstract journal with indexes.
Subscr. $ 76,50 a yr., $ 19,15 additional for foreign mailing;
INDEXES to the STAR: semiannual
Subscr. $ 25,55 a yr., $ 6,40 additional for foreign mailing;
Avail. on subscr. from the SOD/GPO, Washington D.C., 20402.

Presents abstracts of worldwide report literature in the aerospace sciences, including NASA's own reports. In 1973 about 24,000 items were included. Abstracts are indexed by subject, author, corporate source, and report and accession numbers.

3. International aerospace abstracts (IAA).
American Institute of Aeronautics and Astronautics, Inc. New York. Semimonthly, with cumulative index volumes.
Subscr. $ 160,00 a yr., $ 175 outside USA.
Cumulative index volumes subscr. $ 100,00 a yr., $ 115,00 outside USA.
Avail. from the American Institute of Aeronautics and Astronautics, Inc., 750 Third Av. New York, N.Y. 10017.

The IAA complements STAR's coverage of report literature by abstracting worldwide book and journal literature on the same subjects.

Subject categories of the STAR (and the IAA) - subdivisions omitted.

AERONAUTICS

01	Aeronautics (general)
02	Aerodynamics
03	Air transportation and safety
04	Aircraft communications and navigation
05	Aircraft design, testing and performance
06	Aircraft instrumentation
07	Aircraft propulsion and power
08	Aircraft stability and control
09	Research and support facilities (air)

ASTRONAUTICS

12	Astronautics (general)
13	Astrodynamics
14	Ground support systems and facilities (space)

15 Launch vehicles and space vehicles
16 Space transportation
17 Spacecraft communications, command and tracking
18 Spacecraft design, testing and performance
19 Spacecraft instrumentation
20 Spacecraft propulsion and power

CHEMISTRY AND MATERIALS
23 Chemistry and materials (general)
24 Composite materials
25 Inorganic and physical chemistry
26 Metallic materials
27 Nonmetallic materials
28 Propellants and fuels

ENGINEERING
31 Engineering (general)
32 Communications
33 Electronics and electrical engineering
34 Fluid mechanics and heat transfer
35 Instrumentation and photography
36 Lasers and masers
37 Mechanical engineering
38 Quality assurance and reliability
39 Structural mechanics

GEOSCIENCES
42 Geosciences (general)
43 Earth resources
44 Energy production and conversion
45 Environment pollution
46 Geophysics
47 Meteorology and climatology
48 Oceanography

LIFE SCIENCES
51 Life sciences (general)
52 Aerospace medicine
53 Behavioral sciences
54 Man/system technology and life support
55 Planetary biology

MATHEMATICAL AND COMPUTER SCIENCES
59 Mathematical and computer sciences (general)
60 Computer operations and hardware
61 Computer programming and software
62 Computer systems
63 Cybernetics
64 Numerical analysis
65 Statistics and probability
66 Systems analysis
67 Theoretical mathematics

PHYSICS
70 Physics (general)
71 Acoustics
72 Atomic and molecular physics
73 Nuclear and high-energy physics
74 Optics
75 Plasma physics
76 Solid state physics
77 Thermodynamics and statistical physics

SOCIAL SCIENCES
80 Social sciences (general)
81 Administration and management
82 Documentation and information science
83 Economics and cost analysis
84 Law and political science
85 Urban technology and transportation

SPACE SCIENCES
88 Space sciences (general)
89 Astronomy
90 Astrophysics
91 Lunar and planetary exploration
92 Solar physics
93 Space radiation

GENERAL
99 General

4. Nuclear science abstracts (NSA)
Technical Information Center, Atomic Energy Commission, Oak Ridge, Tenn. Semimonthly.
Subscr. $ 75,50 a yr., $ 19,00 additional for Foreign mailing; foreign mailing 81c. additional.
Indexes; /semiannual/- author, report numbers and subject indexes.
Subscr. $ 35,70 a yr., $ 9,40 additional for foreign mailing.
Available on subscr. from the SOD/GPO, Washington D.C., 20402.

The NSA provides worldwide coverage of unclassified atomic energy literature.

Subject categories of the NSA (subdivisions omitted)

Chemistry
Controlled thermonuclear research
Engineering
Environmental and earth sciences
Instrumentation
Isotope and radiation source technology
Life sciences
Materials
Nuclear materials and waste management
Particle accelerators
Physics (astrophysics and cosmology)
Physics (atmospheric)
Physics (atomic and molecular)
Physics (electrofluid and magnetofluid)
Physics (high-energy)
Physics (low-temperature)
Physics (nuclear)
Physics (radiation and shielding)
Physics (theoretical)
Reactor technology and regulation
General

The NTIS publishes since 1965 simultaneously with the GRA (item 1) a semimonthly, entitled

5. Government reports index (GRI)
Commerce Department, National Technical Information Service, Springfield, Varginia.
Subscr. $ 70,00 domestic, $ 95,00 foreign.
A combined subscription of GRA and GRI $ 125,00 domestic, $ 175,00 foreign.

The GRI indexes three abstract journals: GRA, STAR and NSA by subject, author, source, report number and accession number; to the extent of about 60,000 items in a year.

6. Weekly government abstracts, published by the NTIS in about 25 subject categories, bring news of highlighted reports. Subscription about $ 0.95 per item.

7. Monthly catalog of United States Government publications, Public Documents Department, Government Printing Office, Washington, D.C.
Subscr. $ 19,35 a yr., including annual index, $ 4,85 additional for foreign mailing;
Avail. on subscr. from the Superintendent of Documents, Government Printing Office, Washington, D.C.

February issue includes Appendix entitled "Directory of U.S. periodicals and subscription publications" (in 1974 2796 items); September issue includes "List of depository libraries"; December issue includes an annual index. As useful as the February Appendix is the "Price list No. 36: Government periodicals and subscription services", Washington, SOD/GPO.

The "Monthly catalog" describes governmental publications printed by the Government Printing Office, distributed, however, in different ways (by the SOD/GPO, NTIS and by issuing agencies). Its scope is about 15,000 entries in a year. Includes translations by the Joint Publication Research Service (JPRS), Arlington, Va. 22201 of soviet research monographs, abstracts, etc.

8. Official gazette of U.S. Patent Office: Patents, Commerce Department, Patent Office, Washington, D.C. Weekly.
Subscr. $ 211,00 a yr., $ 52,75 additional for foreign mailing.
Avail. on subscr. from the SOD/GPO, Washington, D.C., 20402.

Other federal abstract journals to be mentioned: Air pollution abstracts, Water pollution abstracts, Index medicus, Bibliography of medical reviews, Toxicity bibliography, Current bibliography of epidemiology, etc.

9. Bibliographies of reports

The Office of Technical Services (OTS) and the Clearinghouse of Federal Scientific and Technical Information (CFSTI), both predecessors of the NTIS, have published a series of nearly 200 retrospective bibliographies of selected reports and translations prior to 1966 under the codes "CTR" and "SB". These are enumerated in the "List of Clearinghouse selective bibliographies" which is available from the NTIS on request.

Contemporary bibliographies are traceable in cumulative subject indexes of the GRI, STAR and NSA: their number can be estimated to 200 yearly.

For retrospective ordering of its publications the SOD/GPO issues and sends free on request "Price lists of government publications" in various broad subjects.

Where to order - where to request

Reports and publications referenced by governmental abstract journals are distributed in different ways, according to information given in the respective entry: on a commercial basis (through the NTIS, SOD/GPO, Patent Office and other) or by issuing agencies only. The issuing agencies do not always sell their publications, sometimes they are interested in establishing exchange relations.

Two most important commercial distributors of reports and publications released by the Department of Defense, the N.A.S.A., the Atomic Energy Commission and by other governmental agencies are the National Technical Information Service (NTIS) and the Superintendent of Documents, U.S. Government Printing Office (SOD/GPO).

The National Technical Information Service (NTIS)

When ordering documents, prepayment or opening of a deposit account is requested. A minimum deposit with the NTIS is $ 25.00. Standard prices, effective from October 1, 1974 - are as follows: a microfiche $ 3,75 ($ 2,25 plus $ 1,50 per item for foreign service charge); a paper copy to 300 p. $ 5,50 ($ 3,00 plus $ 2,50 per item for foreign service charge). Since the pricing varies it is advisable to consult the document entry and also general instructions in abstract journals from time to time.

The Superintendent of Documents, U.S. Government Printing Office (SOD/GPO), Washington, D.C.

Whereas the NTIS sells documents in a microfiche form, the SOD/GPO sells only paper copies of publications marked so in the Monthly catalog of U.S. Government publications. Prepayment is needed or opening of a deposit account with a minimum deposit $ 25,00.

There are also 13 retail GPO bookstores outside of Washington, D.C. and numerous bookdealers and services in the U.S. with selected publications in stock. Ordering here may be faster since the SOD/GPO is overwhelmed with orders.

Although major part of NASA publications is available through the NTIS, and SOD/GPO respectively, the NASA's Scientific and Technical Information Facility (STIF) distributes many of NASA's own reports. These are marked by an asterisk in the abstract journal STAR. The Distribution and

Exchange Branch, Scientific and Technical Information Office, Office of Industrial Affairs and Technology Utilization, N.A.S.A., Washington, D.C., establish also exchange agreements with similar institutions abroad. Distribution activities of the NASA Technology Utilization Office, Code KT, Washington, D.D., are already mentioned earlier.

The best guides to the use of complex distribution services are the instructions of the abstract journal STAR and informative NASA booklet. The NASA Scientific and Technical Information System... and how to use it, Transferable Technology - publications reporting innovations suitable for many purposes and others sent by the Technology Utilization Office on request.

Items announced by the International Aerospace Abstracts are available from the American Institute of Aeronautics and Astronautics, New York.

The AEC Technical Information Center, Oak Ridge, has a new contract with the Microsurance, Inc., Oak Ridge, under which the Microsurance will sell AEC reports as well as reports from nuclear energy organizations outside USA - partnership organizations of the AEC. For distribution terms information is available from the AEC Technical Information Center or the Microsurance. The AEC Technical Information Center distributes on request valuable informative booklets: "What is available in the atomic energy literature", "Technical books and monographs sponsored by the USAEC", "Informal listing of bibliographies of atomic energy literature", etc.

Patents are available from the Commissioner of Patents, Washington, D.C., for a standard price 50 ¢ per item, payable by coupons sold by the Commissioner of Patents.

The Library of Congress, Photoduplication Service, Washington, D.C., supplies copies of reports released by the Department of Commerce prior to June 1, 1961.

The National Library of Medicine - issues the "Catalog of publications" with numerous medical reports and publications which are distributed exclusively by the NTIS (reports) and by the SOD/GPO periodicals. Index Medicus, Special bibliographies etc. About exchange possibilities information is available from the NLM, Exchange-TS-A-3, Bethesda, Md. 20014.

Agricultural research publications are often distributed by issuing agencies, partly only by the SOD/GPO. For a regular checking the "List of available publications of the U.S. Department of Agriculture" is available and for exchange information the USDA National Agricultural Library, Belltsville, Exchange Section, Md. 20705 is to be contacted.

Individual requests

Numerous governmental agencies distribute their own publications. When requesting from an issuing agency directly, letters should be addressed to the person and department responsible for secondary distribution (the technical reports group, the technical publications (printing) group, the contracts department or the respective research and development department). If these are not known, it is advisable to address requests to the agency's own special library. Often it is preferable to request a free "Publication list" of the respective issuing agency. Each list gives information as to how to request publications, which items are free or whether an exchange is possible.

Special reports originating from different sources (also outside the federal research complex, i.e. from research performed by industrial laboratories or by universities & colleges), if not available through usual channels could be also requested from the author or from the issuing laboratory or department. It is necessary to give always complete bibliographic information, a clearly indicated return address and/or an address label annexed to the letter. A courtesy copy for each department taking action on the request should be sent too. It is desirable also to add a statement such as the following: "If you are unable to comply with this request, please, route it to the proper office or return it to us at your earliest convenience". Requesting from the issuing laboratory or department, however, has a probability that the request will be ignored or delayed. Sometimes it is necessary to send a claim whenever there is no response within a reasonable time.

Recommended directories:

A Directory of information resources in the United States - Federal Government
National Referral Center for Science and Technology, Library of Congress, Washington, Library of Congress, 1974, 416pp.
-ditto- Physical sciences - Engineering, 1971, 803pp.
-ditto- Biological sciences, 1972, 577pp.
-ditto- Social Sciences - together about $ 20,00
Avail.: SOD/GPO, Washington, D.C. 20402.

Directory of special libraries and information centres ed. by Anthony T. Kruzas et al., 3rd edition.
3 volumes. Detroit, GALE Research Company, 1974, (Detroit, Mich. 48226)
Vol. 1. Special libraries and information centers in the United States and Canada. About 1,400pp. Subject index. $ 48,00.
Vol. 2. Geographic-personnel index. About 600pp. $ 28,00.
Vol. 3. New special libraries. A Periodic supplement covering the period between editions of the base volume. Cumulative indexes. Subscription, four issues, $ 42,00.

The World of learning, 1973-74, 24th edition. 2 volumes. 1958 pp.
London, EUROPA Publications Ltd., 1974.
A directory of educational, scientific and cultural organizations throught the world. Price ₤ 14.50.

American library directory 1972-1973, 28th edition - ed. biennially by Helaine MacKeigan.
New York & London, R.R. Bowker Company, 1972. Xerox. 1212 pp.
A Classified list of libraries in the United States and Canada with personnel and statistical data.
Price $ 38,00.

Beside the Federally supported activities outlined in this article there is widespread research in sciences and technology performed by universities and colleges and especially by industrial firms.

Significant achievements of U.S. universities and colleges are often doctoral dissertations and masters theses referenced by:

> Dissertation abstracts international. Section A: Humanities and social sciences. (Formerly: Dissertation abstracts)
> Ann Arbor, Mich., University Microfilms, Xerox Company.

Microfilms of dissertations and theses are available from the University Microfilms, Xerox Company, P.O. Box 1764, Ann Arbor, Michigan.

> Research centers directory. Fourth ed. revised. Ed. Archie M. Palmer, Gale Research Company, Detroit, Michigan 48226, 1972, $ 47,50. 1033pp.
> (A guide to university-sponsored and other non-profit research organizations)
> About 6500 entries, covering USA and Canada.

The large scope of industrial research and development in the USA representing about 30-40 per cent of nation's performance, appears from the voluminous industrial research directories. To locate and to procure the most convenient directory of a general nature or of a special interest, it is useful to consult a guide to directories such as:

> Guide to American directories, 8th ed. Edited by Bernard Klein. Detroit, Gale Research Co., 1974. 477p. $ 30.00
> [Lists over 4,000 directories]

> Guide to American scientific and technical directories. Detroit, Gale Research Co., 1972. 350p. $ 23.00
> [Lists over 2,000 directories]

Whereas results of Federal research are well referenced, the industry-originated reports are only scarcely enumerated by abstracting services. The Engineering Index and other specialized indexes or abstracting services include selected reports. When reports and patents are cited in journal literature, they are traceable also in the Science Citation Index (SCI). In 1973 the "Patent citation index" of the SCI (part of Citation index) enumerated about 20000 patents originating from all countries.

Industrial firms sometimes publish "house journals" containing reports etc. The Special Libraries Association, San Francisco Bay Region Chapter has published "Science-technology house journals" listing selected journals of industrial firms. The third edition is in preparation and will be available in early 1975 from Beckman Instruments, Inc., Spinco Division, Attn: Mrs. Phyllis Browning, 1117 California Av., Palo Alto, Calif. 94304, at about $ 10,00.

For the descriptive cataloging of reports the publication "Standard for descriptive cataloging of Government scientific and technical reports" Rev., Oct. 1966 may be consulted. This has been prepared by the Committee on Scientific and Technical Information (COSATI), Federal Council for Science and Technology, Washington, D.C. for the Defense Documentation Center, Defense Supply Agency as technical report AD 641092 / PB 173314.

A specimen catalogue entry is as follows:

> AD - 623 665
> California Univ., Berkeley, Operations Research Center.
> AN EXTENSION OF GENERALIZED UPPER BOUNDED TECHNIQUES FOR LINEAR PROGRAMMING. Research report.
> R.N. Kaul. 1965, 33p.
> Contracts DA-31-124-ARO(D)-331, Nonr-222 (83)
> ORC-65-27; AROD-5307:5
> NTIS HC $ 3,00, MF $ 2,25

References

[1] Bedsole, Danny T.: Technical reports. In: Acquisition of special materials, ed. Isabel H. Jackson, San Francisco Bay Chapter, Special Libraries Association, San Francisco, 1965, 222pp.

[2] Federal funds for research, development, and other scientific activities - fiscal years 1972, 1973, and 1974, Surveys of science resources series, Volume XXII, Washington, D.C. National Science Foundation, 1974, viii, 61pp. NSF 74-300.

[3] Federal Government - A Directory of information resources in the United States. National Referral Center for Science and Technology, Library of Congress, Washington, 1974, 416pp.

APPENDIX

Repartition of Federal support by agencies and by research fields

The Federal Government budget for 1974 has reserved for research and development activities of Federal agencies an amount of 17,4 billion - a ratio estimated to 6,5 per cent of total budget outlays. This support represents more than one-half of all the funds for national research and development performance projected at $ 32,1 billion in 1974.

Assignment to concerned agencies:

	(Dollars in millions)	per cent
Department of Defense	8,833	51
(Army ... 2,184)		
(Navy..... 2,751)		
(Air Force 3,379)		
N.A.S.A.	2,969	17
Dept. of Health, Education and Welfare	1,900	11
Atomic Energy Commission	1,411	8
National Science Foundation	525	3
(Total	15,638 i.e.	90 %)

The remaining ten per cent: Department of Transportation 425 million, Department of Agriculture 344, Department of the Interior 262, Department of Commerce 236, Environmental Protection Agency 138, other agencies 340 million.

Federal agencies perform only about 28 per cent of their research and development tasks "intramurally". Major part (about 72 per cent) is performed "extramurally" under contracts and grants, by different participants. These are: Industrial laboratories (50%), universities and colleges (16%), other institutions (6%). Extramural performers of importance are so-called Federally Funded Research and Development Centers (FFRDC): about sixty research centers exclusively or substantially financed by the Federal Government and administered by universities and colleges or by other nonprofit institutions, partly by industrial firms.

As to the character of work supported, the activities are divided roughly as follows: basic research 14 per cent, applied 25 per cent, development 61 per cent. The less lucrative basic research is performed mainly by universities and colleges (over one-half), whereas the development activities by industrial firms (about two-thirds).

Division by field of science: life sciences 31 per cent, engineering 29, physical sciences 17, environmental research 12, other 11.

In the field of scientific and technical information the 1974 support amounted to $ 440 millions, assigned as follows: the Department of Defense $ 150 millions, Department of Commerce 87 millions, Dept. of Health, Education and Welfare 72 millions, N.A.S.A. 27 millions, National Science Foundation 11,1 millions etc.

Out of the above funds the following are the further breakdown:

-documentation, reference, and information services (technical reports, notes, memorandum, contractor and research reports, proceedings, bibliographies, monographs, etc.)	$ 202 millions
-publication and distribution	$ 127 millions
-research and development in information sciences	$ 74 millions
-symposia and audiovisual media	$ 37 millions

ORGANISATION OF INFORMATION GRID WITHIN A BRANCH

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Describes the potentialities available in the CSIR complex for establishing Branch Information Centres (BIC) in different subject areas. Mentions the functions of the BIC and the different components of such a system, its organisation, financing, services, and coordination.

BACKGROUND

The CSIR Laboratories and the Cooperative Research Associations have been giving earnest attention to develop information facilities in their areas of specialisation. The information facilities built up by many of them are unique as well as extensive. The CSIR Laboratories and the Co-operative Research Associations have therefore, potential for establishing Branch Information Centres for a good number of industrial disciplines, around the nucleus of information facilities already built up by them. Wherever necessary, the facilities could be augmented for purpose of undertaking service on national scale. Branch Information Centres can be set up at the CSIR Laboratories and Cooperative Research Associations for such of the following subjects:

Metallurgy
Chemical Technology
Leather Technology
Food Technology
Aeronautics
Electronics
Glass and Ceramics
Pharmaceuticals
Mining Industries
Coal
Environmental Engineering
Road
Instrument-Technology
Cement
Textiles
Tea
Jute
Rubber
Mechanical Engineering
Petrochemicals
Wool
Oceanography
Medicinal Plants
Building
Paints

In the overall development of the National Information System for Science and Technology, the Branch Information Centres, which provide subject-oriented (or mission-oriented) information services, constitute second level sub-system. The Branch Information plays a most significant role in collection and dissemination of information to users belonging to a particular discipline. It is the nodal point for establishing linkages between the National Information Centres at the higher level and the Local Information Units at the lower level.

OBJECTIVES

The Branch Information System, would place considerable emphasis in providing information services of direct and immediate importance to our R & D establishments and industries. The System will enable our industries to be exposed to current status of technology. It will facilitate transfer of technology from abroad. The competitive character between internal and external technologies and within the internal technologies themselves, as exposed through the services generated from the System, will have a great impact on our industries for aiming at better performances through research, development and innovation processes. Unintended duplication of R & D efforts, due to lack of information on advances

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Paper presented at the Workshop on Planning of Branch Information Centres in CSIR, New Delhi, 25-27 February 1975.

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already made, would also be eliminated when information flow is ensured through the System. The System would make our industries - large, medium and small - use scientific and technical knowledge in an increasing measures.

FUNCTIONS

The functions of the Branch Information Centre would be to provide the following services:

- i) Specialised current indexing and abstracting services including S.D.I.;
- ii) Subject bibliographies;
- iii) Subject union catalogues;
- iv) Information retrieval on subjects;
- v) Information on patent specifications, standards, etc.;
- vi) Collection and dissemination of scientific, technical and economic data;
- vii) Business and market information;
- viii) Translation and document supply; and
- ix) Preparation of surveys, state-of-art reports, scientific and technological forecasting, and techno-economic and management information services.

In addition, the Branch Information Centre would build up and maintain a document collection, supplementing those of the institutions in the branch. It would be entrusted with responsibility for coordination of information services within a branch. It may offer training facilities for meeting the manpower requirements. It may promote creation and development of Local Information Units by offering advisory services and assistance in information systems analysis, design, etc. The Branch Information Centre would build up data banks relevant to its scope and activity. It would envisage developing computer-based information services for the branch, in cooperation with National Information Centres and ensuring national and international compatibility. The Branch Information Centre would develop relations and maintain cooperation with foreign information centres, R & D institutions, professional bodies, etc. for ensuring exchange of information.

CONSTITUENT UNITS OF BRANCH INFORMATION SYSTEM

The Branch Information Centre is the focal point for planning, development and coordination of resources and services within the branch. The Local Information Units belonging to the discipline of the branch are the constituent units of the System. The Local Information Units, which are special libraries, documentation and information centres, information analysis centres, data centres, etc, operate in scientific institutions, government agencies, industrial enterprises, business firms, etc.

USERS OF BRANCH INFORMATION SYSTEM

The Branch Information Centre would cater, with particular reference to its field of specialisation, to the information requirements of R & D establishments, government departments and agencies, industries - large, medium and small, societies and associations and individual users. Those engaged in scientific research require scientific information. Those engaged in development, production and such other economic activities require techno-economic information. Planners, administrators and all those engaged in management of R & D require management information. The Branch Information System should, therefore, provide for serving the information needs of all the above types of users.

ORGANISATION

The Branch Information System is an integrated network of information centres belonging to a particular discipline or speciality. In the total national system, it has primary responsibility for offering subject specialised information services to users. The Branch Information Centre and the Local Information Units which are its sub-systems form a grid of its own. The Branch Information Centre functions as a nodal point in the System for providing the linkages. In our present context, the Branch Information Centre may have to be started from the most suitable Local Information Unit which has already developed a strong information base. However, this arrangement has to be considered as transitional and the Branch Information Centre would have to develop itself eventually into a separate and independent organisation. It would be a common facility for all the Local Information Units coming under its purview. It would be conceived as a cooperative enterprise, wherein responsibilities, resources and facilities would be shared by all the constituent units. Till such time it could be run on a self-supporting basis, its development has to be taken care of by all the units in the branch. The Branch Information Centre would provide the institutional support, access to information resources and data processing and reprographic facilities for organising information services in the network. A suitable machinery has to be evolved for maintaining and operating the Branch Information Centre. It may be an independent set-up, administratively responsible to the appropriate science agency and technically sharing responsibility under the National Information System for Science and Technology. It may be advised and guided by a representative body of institutions and users of the System.

FINANCING

The Branch Information Centre would be conceived and developed in a manner that it is run on a self-supporting basis in due course of time. The services to be offered have to be paid for by the users so that the revenue may take care of its establishment. But it may take some time to reach the take-off stage. Till then, it has to be financially supported by all the local units in the branch on an agreed basis. The running expenses of the Branch Information Centre would consist of salaries and allowances of staff, cost of reading materials, chemicals, raw materials and apparatus, subscription to foreign data bases, and contingencies which may include computer hire charges among other things. The capital expenditure for initial development of the Branch Information Centre, consists of land and buildings and machinery and equipment.

COORDINATION

Information Resources

The Branch Information Centre would build up a document collection by way of supplementing the resources already available in the System. It is envisaged that the Local Information Units would build up literature resources for meeting their own requirements and that the Branch Information Centre would only take care to cover material not likelv to be acquired by the Local Information Units. Thereby, the literature resources will be mostly available in actual place of use and unnecessary duplication of material is avoided. The Branch Information Centre would acquire costly material, items difficult to locate and procure such as conference proceedings and industrial research reports, foreign language publications, etc. A fairly complete collection of indexing and abstracting services and reference material in the concerned discipline would be maintained in the Branch Information Centre. It may also collect and maintain a depository of unpublished literature such as theses, research and development reports, trade literature, etc. The entire resources available in the System are accessible to all the institutions belonging to the System. For mobilisation of resources and for locating the existence of documents in the system, union catalogues are indespensible tools. The Branch Information Centre may take responsibility for bringing out union catalogues of holdings in the system. When it is envisaged that the material will be deposited in actual place of use, instead of building up a centralised collection in the Branch Information Centre, access to resources is possible only through provision of reprography facilities in the constituent units of the System. The reprography facilities would, therefore, be decentralised and all the Local Information Units will be equipped with simple copying facilities. The ultimate aim in acquisition would be to ensure that everything worthwhile being published in the subject field is acquired and made accessible throughout the System, no matter where the physical location of the material is. There would be less and less dependency on external sources for meeting the demands for literature.

Services

It may not be necessary that all the services have to be organised only at the Branch Information Centre. It is possible that some of the Local Information Units might have already developed expertise and facilities for offering a particular type of service. In such cases, they may be allowed to be continued and if required, broad-based. The intention would be to utilise the existing services for the benefit of entire System, instead of starting them over again in the Branch Information Centre. In this connection, the information flow may not always follow a radial route through the Branch Information Centre and it may as well be a flow between the constituent units themselves directly. However, some of the mechanised information services like SDI may be centralised in the Branch Information Centre for the sake of cost effectiveness. So also, establishment of data bank relevant to the scope and activities of the branch should be taken care of by the Branch Information Centre. As stated earlier, reprography facilities may be decentralised, while physical production of information publications may be centralised in the Branch Information Centre. The Branch Information Centre may also set up a centralised translation service. It would be convenient in the Branch Information Centre to develop expertise with both subject and linguistic competence for organising the translation service. The document supply service may be undertaken both by the Branch Information Centre and the Local Information Units. Requests for copies of documents from individual users to the Branch Information Centre may, as far as possible, be canalised through the local institutions.

The services offered by the System as a whole, are expected to play an essential part in the flow of of information by maintaining close touch with the status of current scientific and technical research and practice at the Branch Information Centre and by continuing close association with the users in the Local Information Units. The Branch Information Centre would select, evaluate and synthesise information in well defined special fields and/or in areas pertinent to specific mission and present it through the network in a form best suited to the needs of users, either in research, technology or management.

Standardisation of Procedures and Techniques

It may be seen that all the components of the Branch Information System are to be considered holistically as a part of a single system. The System would be an integrated one for making full use of information potential by coordinating the activities and seeking cooperation of individual information centres according to well defined guidelines and division of responsibilities. This presupposes adoption of uniform techniques and methods to facilitate inter-change of information. The network concept is gaining currency throughout the world in view of the rapidly increasing stockpile of machine-readable information. The national systems are also on the threshold of participating in the world-wide, cooperative management of science information under the UNISIST programme of Unesco. Therefore, there should be compatible standards for information techniques and methods not only for interchange of information within the branch but also for exchange of information at national and international levels. While establishing standards for information techniques and methods, the advances being made to introduce modern information technology and managerial methods in information work has to be kept in view. The formulation of standards for information techniques and methods would be a responsibility of the National Information System for Science and Technology. However, adoption of these standards rigorously should be taken care of by the Branch Information System. UNISIST, ICSU/AB, ISO/TC 46 and other international organisations are engaged in evolving appropriate standards. In India, the Indian Standards Institution has brought out a number of standards for library and documentation work. Organisations like INSDOC have also evolved some standard practices. All these may form a basis for following uniform practices throughout the System.

OTHER ACTIVITIES

Training

The Branch Information Centre may organise training facilities to take care of manpower requirements of the System. It is expected that the Branch Information Centre and the Local Information Units would be staffed mostly by science-trained personnel. It would be necessary to train them in information work. The Branch Information Centre has the facility to offer training in information work with particular reference to specific subject fields. The training may consist of regular, short term and in-service courses.

Referral Service

The Branch Information Centre may also set up a referral service, where an inventory of all types of information sources outside the System is maintained. The referral service will enable those who are in need of information available outside the system, to know which sources they should contact.

Promoting use of Information

Information ought to have its market so as to derive its fullest benefits. There is a need to create and step up demand for information. By stepping up demand for information, there is a possibility of the information services being placed on a self-supporting basis and thereby of depending less and less on external support. Proper training facilities in the use of scientific information have to be, therefore, organised by the Branch Information Centre. The training will help to improve the user's attitude and for promoting use of information.

SUMMARY

The Branch Information System would be based on existing facilities and developed as an integrated system. It is, however, flexible with its components operating under a variety of ownerships and jurisdictions, but collaborating together under the aegis of the Branch Information Centre. What is envisaged is some sort of federation of many scattered and previously existing information centres and special libraries, with the Branch Information Centre as be the leading and coordinating agency within the branch. The primary objective of the Branch Information System is to provide research workers, scientists, engineers, technicians and managers and more generally all who have some part to play in scientific activity with access to information in their special fields and this as economically as possible. Active participation of all the institutions in the branch is a sine qua non for developing a strong information grid in the branch.

STOCK VERIFICATION IN THE ABSENCE OF SHELF LIST

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Describes the different methods of stock verification, in the absence of shelf list, tried in the library of the Institute of Armament Technology, Pune. Comparative efficiencies of different methods are discussed. Includes cost analysis.

1 Introduction

Annual verification of stock is an audit requirement in all Government libraries. Whatever the librarians might feel about the need for or otherwise of it, the decision is taken not by the librarian but by the Library Committee or the executive authorities above him. However, it is within his purview to decide the method to be followed. It is important to see that the method he chooses is most economical, simple to operate and does not disturb library services. He can utilise this opportunity to attend to his house-keeping operations such as weeding out dead stock, rectification of shelf arrangement etc. These have been discussed in standard books on the subject. This paper discusses largely the evolution of the method of stock verification followed in the Institute of Armament Technology Library.

2 Frequency

The first decision concerns the frequency of stock verification. Verification of stock could be made a part of the weekly library routine without disturbing the day-to-day functions. The main drawback of this continuous procedure is that no full picture of the loss during a given period would be known. Stock verification could be done annually for small libraries. For libraries with large collections whether it is academic, special or public, it is neither desirable nor practicable to make it annual. For those in the range of 30,000 to 50,000 volumes verification once in 3 to 5 years seems reasonable.

3 Personnel

In most of the libraries stock verification is done by the library staff itself. However, in our case we insist that the work should be done by persons other than the library staff. Every year a Stock Verification Board consisting of a Chairman and members drawn from outside the library is constituted. The library is represented by a staff member to assist the Board in its work. The time schedule, the method of check and the strength of the Board is given by the librarian at the time of constituting the Board. It has been found from experience that the success of the work largely depends on the efficiency and attitude of the Chairman.

4 Methods of Stock Verification

Descriptions of the various methods of stock verification could be found in standard books on the subject. These methods are based on the use of:-

1) shelf list
2) random checking
3) accession register
4) duplicate accession numbers in the form of registers or loose leaves
5) duplicate set of book cards
6) numerical counting.

Each of the above methods has its own advantages as well as disadvantages. The selection of a suitable method entirely depends on the requirements of the library and the facilities available.

5 Loss of Books

In any Open Access library a certain amount of loss is unavoidable. Since the transactions are many and as we are dealing with human beings this loss has to be accepted as unavoidable though undesirable. The loss could be the result of theft, human failure or just misplacement.

It is to be ensured that the loss is not due to theft, fraud or negligence. Loss within a reasonable limit is to be written off. This limit depends on the size and nature of the stock, the number of volumes loaned, the number of books consulted in the library, and the sense of responsibility of the library users as well as library staff. In Open Access a loss of 3 books per 1000 issues as recommended by Ranganathan seems to be a fair limit in normal circumstances. If the authorities are not willing to write off the loss when the loss is not due to theft, fraud or serious negligence, the library staff should not hesitate to bear a portion of the loss provided the users too bear their share of it.

6. Evolution of the Method followed in IAT

Stock has to be verified fully before 31st of March every year. Since no shelf list was maintained, the stock verification had to be based on the original Accession Register. As the Accession Register is a permanent auditable document, the only way left was to duplicate the Accession Register numbers and check the books against these numbers in the new register. This new register which we may call Master Record forms the basic record. The crucial point in this is the method of creating the Master Record and then matching the Accession number of each book on the shelf and those on issue with this record so that 1) it takes least possible time and effort; 2) closure of the library is reduced to the minimum number of days; and 3) reflects accurately the stock position.

Method 1

When the library had about 10,000 books, the Master Record was created without much thought to its layout. The numbers were handwritten on sheets of paper with as many numbers as they could hold i.e. varying from 700 to 900 numbers per page. Then one person called out the Accession number of each book on the shelf and another person scored it off on the Master Record. Numbers remaining unscored on the Master Record corresponded to the Accession numbers of the unaccounted books. Since only one Master Record was used only two persons could work at a time. The method was cumbersome and took more time. The library had to be closed for 20 to 30 days. Besides this, the results were not very accurate.

Change 1

In this the Master Record numbers were printed column-wise with the help of a numbering machine. Though this reduced the fatigue on the persons working and also the errors to some extent, other disadvantages remained.

Method 2

Since the major objective was to reduce the duration of the library closure, more number of persons were employed on the job instead of only two. Thus 8 to 10 persons worked concurrently in pairs. Each pair was assigned specific number of shelves to be completed. One person from the pair called out the Accession number of each book on the shelf and the other recorded them on a sheet of paper which we may call Shelf Record. At the end the numbers of this Shelf Record were scored off on the Master Record. Though this procedure reduced closure period of the library it was clumsy, gave rise to errors and was tiresome.

Change 1

This consisted of changing the format of the Master Record and also of the Shelf Record.

Master Record: It was made in the form of a booklet with each page corresponding to a thousand numbers of the Accession Register. Within a page 1000 numbers were arranged column-wise in fiftys i.e. from 0 to 999, the thousandth digit being taken care of by the page number. With this layout it was easier to locate a number in the Master Record as the position of each number was fixed and the scoring off was quicker.

Thus for example the numbers 2, 385, 8411 and 16102 are represented by 2, 385, 411 and 102 of the pages numbered 0, 0, 8 and 16 respectively of the Master Record. Figure-1 shows the specimen layout.

Shelf Record: This was created by writing down only the first three digits of the Accession number of the book called out, the thousandth digit having been taken care of by the page number. This was also in the form of a booklet whose page numbers corresponded to the thousandth digit of the Accession number. Each page accommodated 400 entries being the maximum requirement. Figure-2 shows the specimen layout.

If the Accession numbers of the books called out were 33, 208, 21947 and 21916, they were written either vertically or horizontally as 33 and 208 on page 0, 947 and 916 on page 21.

Later these numbers from the Shelf Record were scored off from the Master Record which finally indicated the unacccounted books.

Change 1

The operation of scoring off from the Master Record was repeated as many times as the number of Shelf Record booklets used. This consumed more time. To avoid this, the Master Record was dismantled and so also Shelf Record. The pages of the Shelf Record booklets were then regrouped so that all pages pertaining to a particular thousand

IDENTITY Pair 3

PAGE No. 16
(i.e. 16 thousand)

0	50	100	...	...	...	...	...	...	900	950
1	51	101	...	...	...	...	...	...	901	951
2	52	102	...	...	...	...	...	...	902	952
3	53	103	...	...	...	...	...	...	903	953
.	..	...	...	...	...	...	...	...	...	...
.	..	...	...	...	...	...	...	...	...	...
.	..	...	...	...	...	...	...	...	...	...
..	..	...	...	...	...	...	...	...	...	...
49	99	149	...	...	...	...	...	...	949	999

Figure-1 Master Record Page

CATEGORY **Reports**

IDENTITY **Pair 4**

PAGE No. 21
(i.e. 21 thousand)

	0	1	2	3	4	5	6	7	8	9
1	33	166	208							947
2	86	102								916
3	87									901
-	24									950
-										
-										
39										
40										

Figure-2 Shelf Record Page

came together and they were scored off from the corresponding thousandth page of the Master Record. Hence many persons could do simultaneously the work of scoring off.

Change 2

Instead of writing the 3 digited Accession numbers randomly on the Shelf Record page they were written in the order of their hundreds. This was done by numbering the columns 0 to 9 standing for their hundreds. Thus all numbers between 900 to 999 were written in column 9, 800 to 899 to column 8, and so on.

The demerit of this method is that it involves besides writing, calling out the numbers twice - once while preparing the Shelf Record and again at the time of scoring off from the Master Record. Even with the improvements mentioned above, it took about 12 days for 12 persons working at 2 1/2 hours a day to complete the checking of 35,000 publications. The library had to be closed for 6 to 8 days.

Method 3

In Method 2 too many errors could crop in due to fatigue resulting from reading the numbers twice. Inspite of careful design of records, verification took 12 days and the library had to be closed for 8 days. With the increasing stock this was bound to go up. In the new slip method reading the Accession number was altogether eliminated. Accession number of each book was written on a slip of size 3" x 5". The slips were kept in the book itself but protruding out. At the end of the operation, the slips from all the books were removed. This enabled the person removing the slips to take care of the books that might have been missed while writing the slips. These slips were then arranged serially in their ascending order. The gaps in the sequence corresponded to the books not accounted for. 8 persons could write the slips for about 29,000 books, reports and issue records just in 5 to 6 days. The results represented the stock position more accurately than in any other method. Its chief drawback was that it took a long time to arrange the slips and it was very tiresome. Handling of 29,000 slips required great care. Hence this method was given up. Inspite of these adverse factors, the method has many advantages to commend.

Method 4

The basic principle involved is the same as in Method 1 i.e. scoring off the Accession number of each book on the shelf directly on the Master Record. The disadvantages of the Method 1 were overcome by incorporating some of the changes introduced in Methods 1 and 2. As writing a number takes more time than reading it, the Shelf Record was eliminated. The overall features of the Master Record were same as in Method 2. But within a page the numbers 0 to 999 were arranged in 10 groups of 100 numbers each. Locating a number was same as in modified Method 2 wherein page number indicated the thousand. Figure-3 gives a specimen page.

PAGE No. 16

(i.e. 16 thousand)

000	1	2	..	8	9	100	1	2	..	8	9	-----	900	1	2	..	8	9
10	11	12	..	18	19	10	11	12	..	18	19	-----	10	11	12	..	18	19
20	21	22	..	28	29	20	21	22	..	28	29	-----	20	21	22	..	28	29
..	..	..	..	..	..	..	..	..	..	..	..	-----	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	-----	..	..	..	..	..	..
80	81	82	..	88	89	80	81	82	..	88	89	-----	80	81	82	..	88	89
90	91	92	..	98	99	90	91	92	..	98	99	-----	90	91	92	..	98	99

Figure-3 Master Record Page

The numbers were cyclostyled and pasted on double-foolscap size paper to form registers. Each pair worked with a register. On calling the Accession number for a book, the other scored it off on the register. At the end, the scored off numbers from various registers were transferred to one of them which at the end gave the Accession number of the unaccounted books. To facilitate easy transfer of the score offs, the registers were dismantled and sheets bearing the same page number i.e. same thousand were grouped together.

Change 1

Master Records were too unwieldy in size and its register form made the turning of pages very inconvenient. This was overcome by reducing the space between numbers and also between the groups of hundreds. The pages in its reduced size were stappled to form easy to handle booklets.

Change 2

Numbers arranged in groups of hundreds as in Figure-3 was more straining to the eye and hence arranging in columns of 50 numbers as in Figure-1 was reintroduced.

7. Efficiency

The most tedious job for a librarian in stock verification is that of accounting the books shown as untraced before the final loss is arrived. When the stock was about 12,000 the initial list of unaccounted books used to be in the range of 1500 to 2000 which increased with the stock and issues. To trace these books the library staff had to spend enormous time and efforts. To make the initial list as small as possible was one of the objectives of the various methods and modifications tried. Modified Method 4 which is presently followed seems to be the most efficient procedure for complete stock verification. The significant features of this method are that:

1) For a stock of about 40,000 books, reports and bound volumes of journals the library needs to be closed only for about 3 to 4 days.

2) The initial list of unaccounted books comes to about 300 to 600 depending on the care taken at the time of checking.

3) Errors due to fatigue is reduced.

4) Proper records of work could be maintained and responsibility assigned.

5) Job is done in an orderly manner.

The present method is the result of evolutionary changes that were tried in the last 8 to 10 stock verifications. It also appears that in its present stage it has reached its final form. Any further improvements seem to be possible only in the direction of reducing or avoiding altogether the closing of library by restructing the time schedule of checking within the framework of 3 to 4 days. Table-1 gives the results of stock verifications obtained by following different methods.

Table-1 - Results of Stock Verification

Year	Method	Stock	Persons Employed	Total Man Hours	Books Checked Per Hr.	Days Lib. Needs Closing	Initial Loss	Final Loss	Previous Loss Retraced
1961-62	Method 1	12,000	3	-	-	25	1,800	31	-
1967-68	Method 3	29,000	8	180	160	5	450	35	8
1969-70	Method 4	33,000	8	206	160	8	600	23	-
1970-71	Modified Method 2	34,500	12	345	100	8	550	18	3
1974-75	Modified Method 4	41,000	10	205	200	4	500	15	-

8 Cost Analysis

Two persons can check on an average 200 books per hour under modified Method-4. It is assumed here that the Accession number is given along with Call number on the spine or cover of each publication. To complete the stock verification of 40,000 books, bound volumes of journals and reports it takes 200 man hours. If the average salary of an assistant with 125 productive working hours per month is taken as Rs.500, the cost works out to Rs.800. With the addition of the cost of Chairman's time and that of office stationery at Rs.100 to Rs.150 and Rs.50 respectively, the operation "STOCK VERIFIED" costs Rs.1,000.

Acknowledgement

Thanks are due to Shri H.G. Desai, Librarian of the Institute for his active participation in the evolution of the various methods and to Dr. J.N. Nanda, Director and Dean of the Institute for his permission to publish this account.

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DATA BASE SERVICES

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States the increasing importance of data type of information for decision making in present day society. Discusses the role of Branch Information Centre in data handling. Presents a scheme for organising a data handling capability and discusses some data services.

Introduction

The contemporary society needs data. It needs data for planning and development activity in every sphere. Data are required for decision-making as well as formulating a plan of action. These decisions and plan of actions are needed at various levels that is to say at national level, at planning level, at administrative level, and at execution level. For example, the commission and the Department of Science and Technology need data for formulating a Science Plan for the nation. The CSIR, the Department of Electronics etc. will need data for formulating a plan in their area. A Laboratory director will need data for determining priorities and allocating facilities. A research worker will need data for executing his research work. Thus the requirement of data is different for different purposes. It varies with the purpose and nature of decision involved. The data collected for one purpose may not totally be irrelevant to another purpose. Some manipulation may be required to transform the data for the use elsewhere. This means that the raw data could further be processed to yield systematised and integrated data needed for decision making.

Paper presented at the Workshop on Planning of Branch Information Centres in CSIR, New Delhi, 25-27 February 1975.

Types and Sources

The data must be collected. Data are collected as result of a study involving observations or surveys. In such form the data are 'Raw Data'. Raw Data are not usable for decision making. These become usable only after certain manipulations involving organisation and synthesis. This data are termed Systematized Data. All the 'Systematized Data' may not be required or relevant to a particular decision involving executive action. These data must be further analysed and evaluated. Whatever may be the position of data, there must be a storage and accessibility provided to the data. The sources and use of data determine the types of data. By sources is meant the environment in which the data are generated. For example we can have the following types of data:

1) Scientific data. Under this category comes the observation data collected during an experiment like thermal properties of material, spectroscopic data of the material and data on chemical analysis of material. In this category one can conveniently include the printed standard data tables or critical tables.

2) Technical data. In this category the data pertaining to the specifications of various commodities or services are included. These normally cover engineering specifications.

3) Techno-economic data. In this category the data availability of raw material, the semi-finished material, the consumption and both internal and international market are included.

4) Business data. In this category data pertaining to manufacture, sales, warehouses, profits and losses etc. are included. It also includes employment data on various labour along with the data on capital generation and formulation.

5) Industrial data. In this category are included data on various types of industries, their production capacity, the licensing capacity, the consumptions of raw material and power, the product data etc. It also includes data on the various skills employed in the production of products and services.

6) Man Power data. In this category data on various types of skills, employment potential are included.

7) Socio-demographic data. In this category data pertaining to the geographical distribution of the resources as well as the manufacturing capabilities and manpower are included.

Apart from the above categorisation, data are amenable to grouping from the users' view point and from the stability considerations. These groups are stable data which do not change frequently; unstable data which require frequent updating; and live data which change due to on going processes in an industrial context like process control, material control etc.; or by the very use like rolling stock, air-line reservation etc. The complexity of live data demands computer environment for collection, processing, servicing and display. Unstable data depending on the frequency and types of update also require sophisticated skills and equipment. However, stable data and some unstable data needing only replacement as an update operation are to some extent amenable to manual manipulation and servicing.

The above listing is by no means an exhaustive one. It only illustrates that the data can be classified on the basis of the sources generating the data and/or the purpose for which the data are generated. It is essential to keep the subtle differences in the types while organizing a data handling capability.

The Branch Information Centre - Role of a Data Centre

An institution interested in developing data handling capabilities may be called a Data Centre. In the context of National Information System for Science and Technology the data handling capabilities should be developed at the Branch Information Centres. This is logical in the sense that the expertise needed for evaluating and compressing the raw data in a given discipline is available to a Branch Information Centre as its environment. In the totality of all the Branch Information Centres, this distributed facility will provide a ready access to data which are collected at a considerable expense of resources and time over wide spectrum of dicipline. The data handling capability in a Branch Information Centre may be referred as the Data Centre. An attempt will be made to discuss the organization and functions of the Data Centre in the remaining portion of this paper.

The Data Centre

The scheme which will meet the initial aim of every Data Centre, is to make available to the users a potential data obtained from various sources. The Data Centre includes three main components:

1. An organized data collection: the data base;
2. A connection with the data sources which feed the data base;
3. A contact with the users who are expected to interact with the data base with questions.

This can be represented diagramatically as:

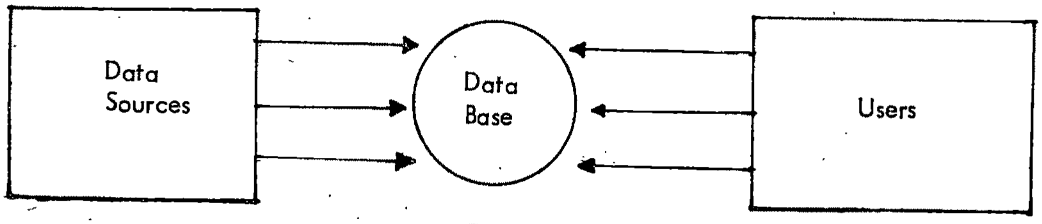


Fig.1

The Data Base

The data collection for a Branch Information Centre is organized in such manner that the data could be questioned by its users. It consists in creation and updating of the files (may be card catalogues) on the basis of the data received and supplied by the sources. In order to achieve this objective it is necessary to build up a system in which the data are organized by eliminating redundant data, to cut the storage costs.

The nature of the data source may be primary data generators (such as industrial groups, research institutions, companies etc.) in which case the Data Centre is expected to process directly source documents.

The users of the Data Centre generally fall into some discernable categories like: decision makers, persons responsible for technological and statistical studies and research workers.

It may be said that for any Data Centre, the data base is the pivot between the data source and the user. Thus it is severely tied to the extraction and questioning process. The data bases include simple data. Constitution of key words for questioning the system, is an essential technique which is applied in automatic information and documentation systems. As to the data base, the operating card indexes may or may not possess an identical structure with those of the source-card indexes. If the card-indexes have identical structure, the organization of the data collecting is conceived on the questioning system. Very frequently, the card indexes do not have identical structure and must be created and actualized, starting from the data supplied in the shape and conditions established by the generating source. If communication devices are at the reach of Data Centre, then it may not be necessary to concentrate all the operating card indexes in a single place; it is enough if they are tied to the data index – the index which constitutes the core portion of the data base.

Organization of Data Centre

The organization of a Data Centre has two main aspects. One is a general aspect and the other applied aspect. If we compare the organization of a complex information system with that of the Data Centre, we notice that the main difference between the two lies in the importance given to the information analysis. This difference is found in all stages of the organization and is affected through the following categories of personnel:

a) data coordinators;
b) data specialists;
c) data analysts; and
d) programmers.

the data specialists form an essential component of the Data Centre. The need to examine the data on horizontal grounds leads to the use of highly specialized personnel able to appraise the correctness of the data received to solve all the correlation, which needs numerous contacts between the sources and the users of the data centre. The general scheme of organization can be diagramatically represented as in Fig. 2.

The general concept of a Data Centre is based on an analysis of existing data and a determination of the needs to meet.

The above stated elements help us to define the general structural organization of Data Centre in terms of

a) the data source;
b) the documents which supply them;
c) the internal technical characteristics of the system;
d) the user needs.

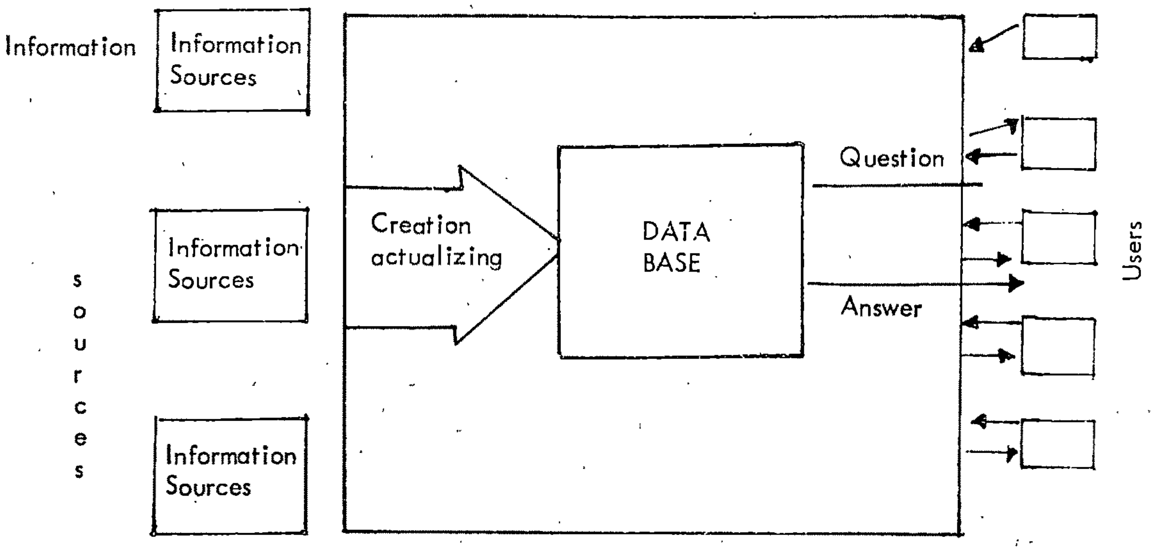
The most efficient method of organization consists in establishing assumptions, concerning what the Data Centre may give, thus establishing the data needs.

The second and more important aspect of organization of a Data Centre is the applied aspect. The criteria for applied organization of a Data Centre may be stated as follows. The organization of a Data Centre has become necessary only to ensure a centralized data base to which one may always appeal and which shall include the basic data. This data base must allow a quick selection of the necessary data and when necessary, the performing of the different processings of these data.

The data base is so organized as to do away with the in-built limitations of manual information system such as low degree of information aggregation and lack of speed. The Data Centre will be in a position to handle unlimited amount of data types, establish multiple dependencies and dominants, for each data type and enable to establish correlations between the data located at different organization levels and different periods. The main considerations to be noted in the structuring of a Data Centre are: the volume and kind of data and the existence or possibilities of access to a computer and other technical equipment. The flow of information of Data Centre can be represented as in fig. 3.

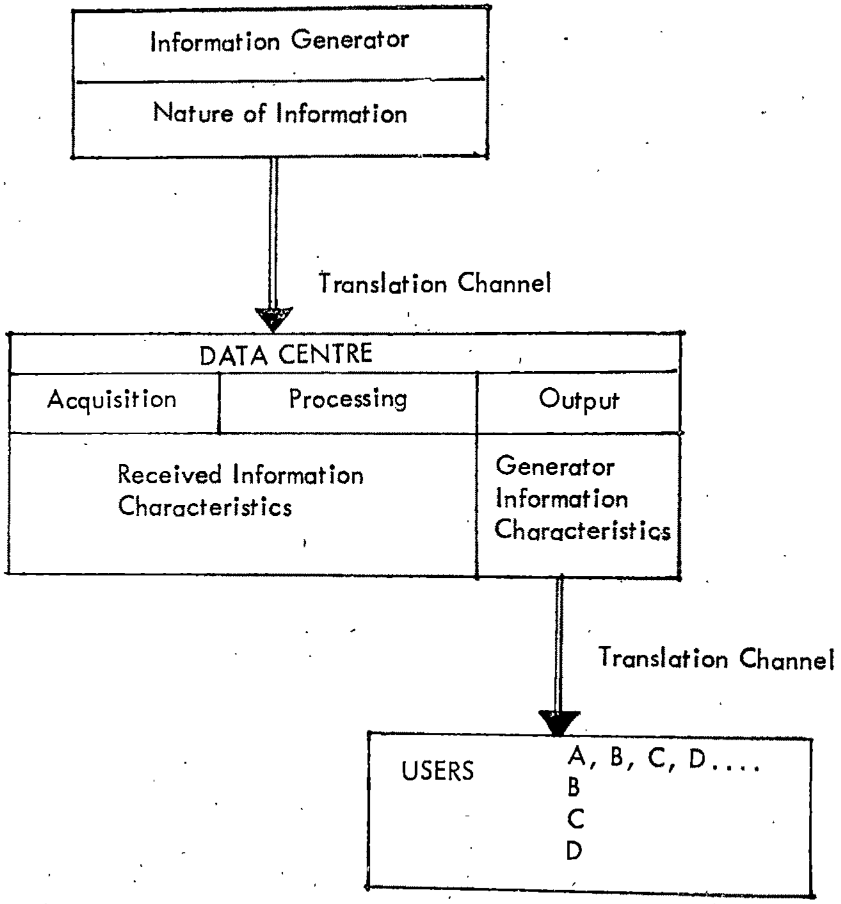
Principles involved in the Organization of Data Centre:

1) Data are received and collected from different documents by a group of specialists who decide the importance and relevance of the data, control and fit them with the generator source.



NEEDS COVERED BY THE DATA CENTRE

Fig.2



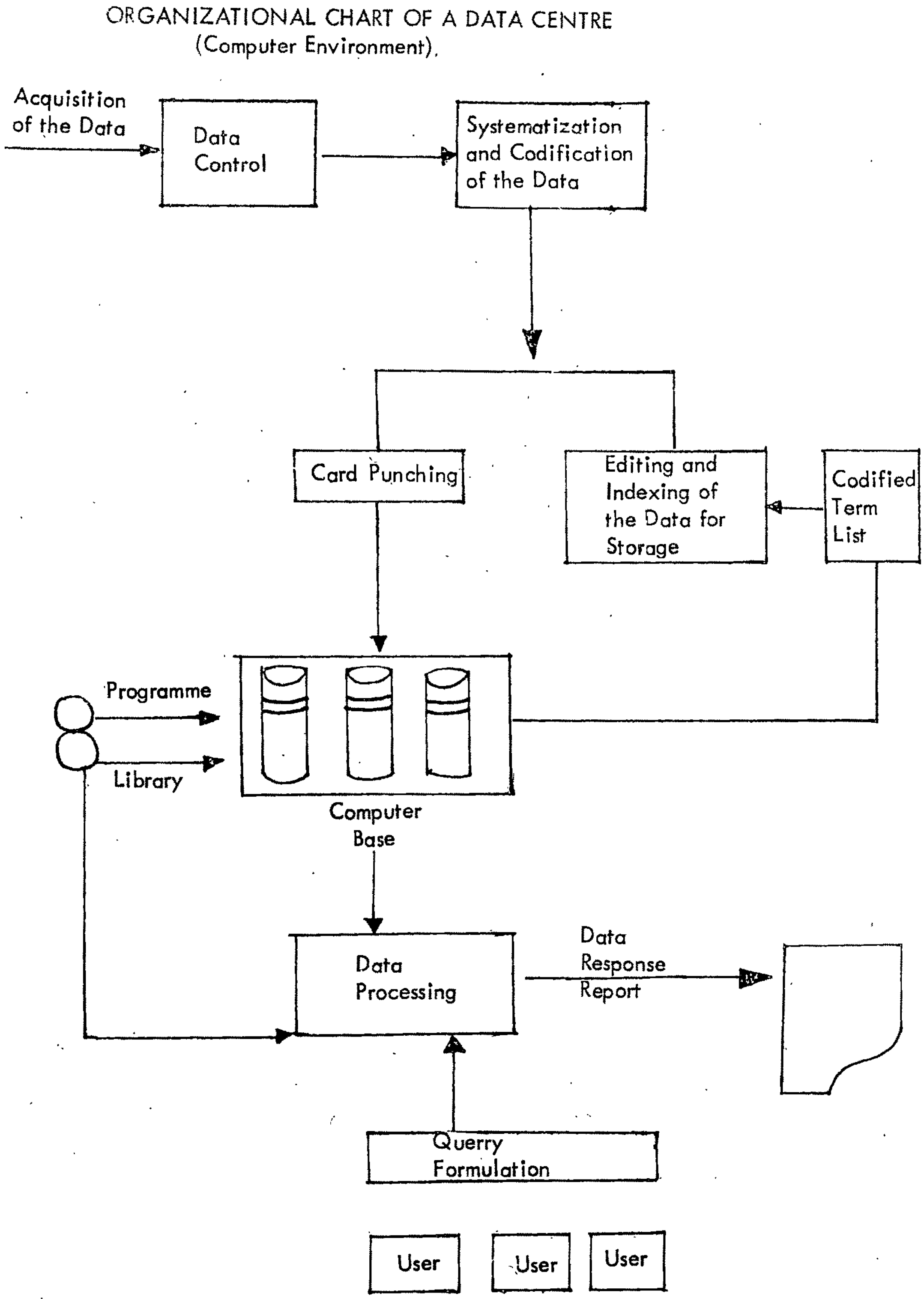

ORGANIZATIONAL CHART OF A DATA CENTRE
(Computer Environment).
Acquisition of the Data
Data Control
Systematization and Codification of the Data
Card Punching
Editing and Indexing of the Data for Storage
Codified Term List
Programme
Library
Computer Base
Data Processing
Data Response Report
Querry Formulation
User
User
User

Fig.4

INDICATING THE STEPS OF DATA EXAMINATION, CONTROL AND CODIFICATION

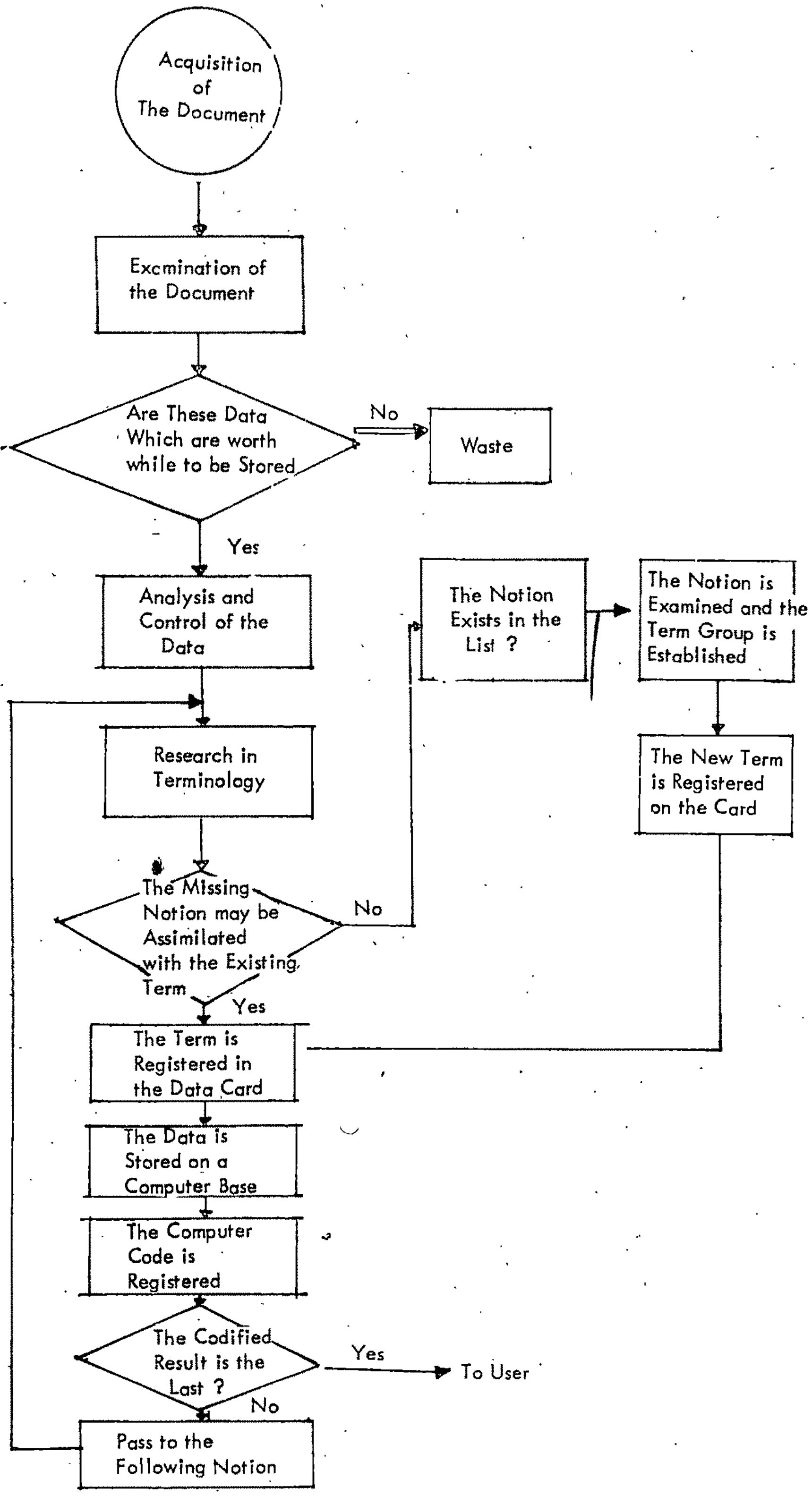

Acquisition of The Document
Excmination of the Document
Are These Data Which are worth while to be Stored
No
Waste
Yes
Analysis and Control of the Data
Research in Terminology
The Missing Notion may be Assimilated with the Existing Term
No
The Notion Exists in the List ?
The Notion is Examined and the Term Group is Established
The New Term is Registered on the Card
Yes
The Term is Registered in the Data Card
The Data is Stored on a Computer Base
The Computer Code is Registered
The Codified Result is the Last ?
Yes
To User
No
Pass to the Following Notion

Fig.5

CHART INDICATING THE STAGES OF DATA SELECTION AND DATA PROCESSING

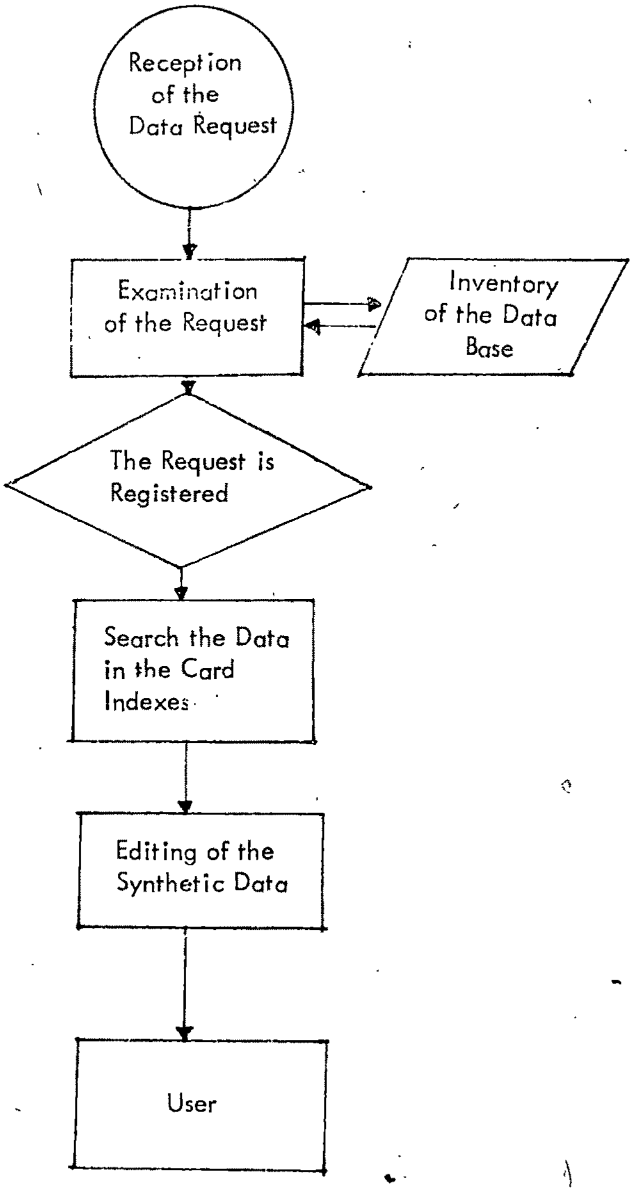

Reception of the Data Request
Examination of the Request
Inventory of the Data Base
The Request is Registered
Search the Data in the Card Indexes
Editing of the Synthetic Data
User

Fig.6

2) The received data are organized in order to establish they represent the basic data which must be processed or Synthetic data which may be necessary for future use in their initial form.

3) The data of first category are registered on punched cards in order to build the card indexes which represent the data base for the computer.

Work Methodology of a Data Centre

The following operations are to be performed to ensure efficient functioning of a data centre:

1) data collecting
2) data control
3) data codification
4) data storage
5) organization of the card indexes
6) data retrieval

The steps of data examination, control and codification with a view of storage are presented in figure 5.

Services of a Data Centre

The data centre works in two ways in order to meet the requests from the users. One is the supply of current information within a subscription including the synthetic data obtained from the processing on different criteria of the basic data. The other method is supply of answers to the requests of the users. The answers include the basic data stored in the data bases and selected on certain constraints imposed by the user as well as synthetic data obtained through processing on other criteria other than those used in the previous case, of the stored data. A computer is needed for providing this type of service. The stages of data selecting and processing are depicted in fig. 6.

Personnel Requirement

In order to achieve the stated objectives of a Data Centre, the following set up and function scheme is suggested (See fig. 7).

In conclusion it may be stated that a Data Centre in a Branch Information Centre must compose of:

a) The basic files known as data base

b) A filing system that makes it possible to update the files, and to integrate data from different files.

c) A data processing system that permits users to extract relevant information from the files adopted to their needs and in a form suited for their decision patterns.

PERSONNEL REQUIREMENT CHART

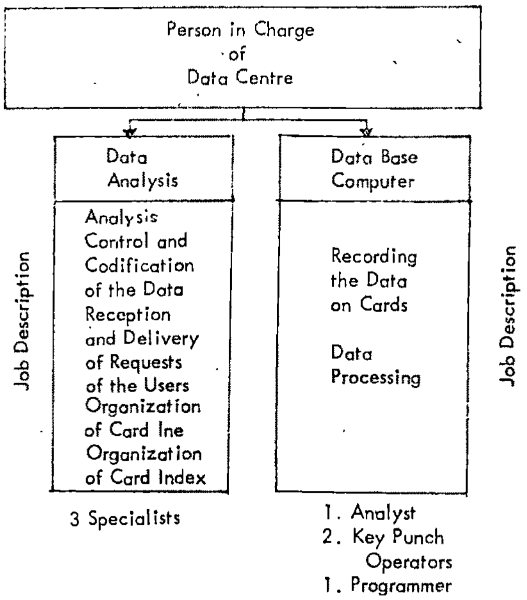


Fig.7

These centres may cooperate among themselves in arriving at a common record format, data-structure format and standards for processing the data and for service so that a comparatively free flow of data exists and there is an ultimate interchangeability of data bases and mobility of persons. This will also ensure an integrated data base for the entire spectrum of science and technology. Further these centres may start with a trial for a responsive service in their respective disciplines. Around this trial service may be based actual service patterns.

Acknowledgement

The authors wish to acknowledge their indebtedness to Shri S. Parthasarathy, Scientist-in-Charge, INSDOC for providing the necessary environment for the preparation of this paper.

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FOCUS ON UNISIST PROGRAMMES

This is the fifth instalment of this Feature. Report on the British Library ISDS National Centre is continued from the previous issue. Other reports are presented from the UNISIST Newsletter Vol 2 No 3.

AN ISDS NATIONAL CENTRE – THE UNITED KINGDOM EXPERIENCE [Continued from the previous issue]

The first problem is to consider the extent of numbering to be undertaken, and in the early stages it is proposed to concentrate on serials published from 1973. A good deal of retrospective numbering has already taken place in the Bowkers Serials Bibliography (covering Ulrich's Periodical Directory and the Irregular Serials and Annuals publications). Further retrospective numbering is also taking place in the course of producing the New Serials Titles 1950-1970 cumulation. With this situation in mind the British Centre will limit itself to:

Handling requests for retrospective numbering received through the International Centre and from users;
Number previous titles of serials which change from 1973 and are not numbered in Bowker or NST.

Coverage

In considering serial coverage it is noted that the ISDS definition is all-embracing and permits the inclusion of both numbered and unnumbered monographs in series. For British purposes we propose to be more specific in the case of monographic series, especially as a general interpretation of the definition could well lead to a considerable amount of work in the needless assignment of ISSN to a wide range of items. Publishers series for example are often adequately dealt with under the ISBN machinery, and in any case the majority of these are not true serials. Obviously there will be no doubt need both an ISSN for the series and ISBN for the parts. It is proposed therefore to treat monographic series as follows:

To normally exclude monographic series issued by commercial publishers whether numbered or not;
To include monographic series emanating from academic, scientific and educational institutions and societies whether numbered or not.

Operations

The Copyright Receipt Office in the British Museum will be used as the source for material, and cataloguing procedures, based on the Guidelines for ISDS will be carried out in the following manner:

Serials will be catalogued and assigned ISSN and the details entered on ISDS worksheets;
Bibliographical checking as necessary will be undertaken to ensure that as many elements as possible are initially provided;
Completed data sheets will be transmitted to the International Centre;
Notification of ISSN to publishers.

In order to establish the system quickly it will be important to advise publishers as soon as a number is assigned to their serial. At the same time it is hoped to develop an in-advance of publication service so that ISSN can be assigned in the first issue of a serial. An immediate response to user requests is also particularly important for although early ISSN for new journals can be made available there will no doubt be many problems of a retrospective nature, and also concerning non-British serials. In order to co-ordinate this activity the national centre could act in the capacity of a clearing house, and even resolve many problems itself. Ultimately as the centre develops it will be in a position to provide access to the ISDS files through various outputs, but at this time these services are some way off and in the initial stages we must concentrate on setting up operations, developing user-relations, and consolidating a base from which development can take place.

Source of environmental information

Following a recommendation adopted at the United Nations Conference on Human Environment, Stockholm, 1972, a pilot project for the setting up of an International Referral System for Sources of Environmental Information (IRS) is being undertaken by the United Nations Environment Programme (UNEP).

The IRS may be considered as the first step towards facilitating the exchange of infomration about local, regional and international experiences in environmental matters. The IRS is conceived as a switching mechanism between users and sources of information and is developed in accordance with UNISIST recommendations and using the experience gained in implementing the UNISIST programme. IRS is not expected to be a full-scale information system but will facilitate multidirectional exchanges of information through a network of users and sources.

More information on this project may be obtained from the United Nations Environment Programme, Palais des Nations, 1211 Geneva 10.

UNISIST ACTIVITIES IN SCIENTIFIC INFORMATION POLICIES AND STRUCTURES

1. Information Policy Objectives

The General Conference of 1972 recognized the need for Member States to create focal points for the co-ordination of national activities in scientific and technical information and of UNISIST National Committees to be responsible for ensuring maximum participation in this programme. Many countries have not yet reacted to the letter of the Director-General of Unesco sent out to Member States inviting them to set up such bodies (see Newsletter Vol. 2, No. 1, 1974). Explanatory action is being undertaken to increase the establishment of national focal points and UNISIST Committees.

In order to offer Member States a means of confronting the important policy issues before them, a checklist of proposals for information policy objectives was prepared based on the Annex to the above-mentioned circular letter of the Director-General. The list, which is fairly comprehensive, is primarily meant for national focal points for information development or a national authority similar to such a focal point and contains some 120 detailed objectives of an information policy. In practice any one country is likely to find that several of the functions are performed already - even if there is no formal focal point. The UNISIST proposals for these Information Policy Objectives were reviewed by the Steering and Advisory Committees of UNISIST, who recommended the widest possible circulation.

2. Regional Co-operation in Information Policy

There is growing evidence that co-operation between Member States in information activities within a geographical or otherwise defined region strongly supports and stimulates the development of information policies, structures and infrastructure at the national level, if such co-operation is based on factors that are common to the Member States within the region concerned.

Such common factors may vary widely in nature, such as common language, geographical position, communication facilities, comparable or complementary information structures, services and/or infrastructures, economic and social interaction, existing agreements at conceptual and/or operational level, etc.

In the framework of UNISIST Objective IV, plans are being initiated to explore the feasibility and desirability of the development of regional co-operation at a technical level between a number of Member States in the South Asian region.

One of the main instruments for such an exploration is the identification of factors and interests in common, primarily through a comparative review of main problem areas and issues in scientific, technical and industrial information policy and management. Based on this identification and the examination of services, structures, resources and needs of the regions during meetings of information experts and representatives of national focal points and/or UNISIST National Committees, it is hoped that programme guidelines can be formulated for the development of national and international information activities within the region.

3. Economic and Legal Aspects of Information Policy

One of the main reasons for the UNISIST Steering Committee to note, in its recommendation to the forthcoming eighteenth session of the General Conference of Unesco, the special importance of information policy to some Member States, was the recognition of the growing importance of legal and economic problems, in particular proprietary, cost and pricing aspects of information policy. Much study has already been carried out on these issues by several organizations and individuals. However, in the context of the UNISIST Programme, concrete agreement between Member States on these important issues is aimed at. In view of this objective a preliminary survey of relevant issues is being worked out as a basis for studies on the financial, economic, administrative and legal aspects of a scientific and technological information policy. The results of these studies will be used for the development rules, regulations and codes for international use in order to overcome existing barriers in information transfer.

4. Long-term Information Policy

As the awareness of information as a resource increases and the interest in UNISIST and national and international policies develops, great gaps in our knowledge about the effects of the application of information are being discovered. It is now becoming more clear that information policy must seek to ensure that the world's professional and specialized knowledge is fully and properly used in guiding social evolution. The information requirements of policy makers, planners, managers and those faced with the increasingly important societal problems of today and tomorrow are becoming critical. UNISIST action in the field of long-term policy development, monitoring and forecasting is being developed in two directions.

First, exploratory studies are being undertaken, partly under contract, on the development of a long-range plan and programme for information policies as they interact with changing societies. The studies will comprise outlines of the nature, function and scope of information; information and the decision process with particular reference to government; government, public policy and the information function; public policy, social development and the enrichment of the individual, and the need for dynamic task-oriented information processes. The studies are aimed at practical programme development in this increasingly important field.

A second direction in which action is being undertaken has as its purpose to add to the knowledge of information and its significance for the present and the future society by:

(a) studying the effects of the application of information and information technology and the interaction between such application and social significant situations;

(b) developing indicators and values for the "knowledge industry" and for information technology assessment, primarily on the bases of collected statistics ("Infometrics") on the need, usefulness, economic and social value, degree of utilization, processing, production, etc., of information;

(c) designing comprehensive and responsive models of the growth of knowledge which can be used to predict action requirements in a given situation and/or in response to specific external and internal pressures.

The establishment of a UNISIST International Information Centre to carry out these functions on a global scale is presently under study.

REPORT ON THE SECOND AND THIRD MEETING OF THE UNISIST WORKING GROUP ON BIBLIOGRAPHIC DATA INTERCHANGE

The second and third meetings of the UNISIST Working Group on Bibliographic Data Interchange took place at Unesco Headquarters, Paris, on 15-16 October 1973 and 8-9 April 1974 respectively.

At the first meeting of the Working Group in May 1973 (see Newsletter Vol. I, No. 3), a Task Group (TGI) had been established in order to carry out a preliminary study of the overlap between existing and proposed formats for bibliographic data. This comparative analysis was confined to two levels: (1) General record formats (carrier) (as it exists in ISO 2709) and (2) Data fields and tagging structure.

As far as carrier formats were concerned, TGI found that all systems investigated had adopted ISO 2709 as the carrier for bibliographic records. The Working Group welcomed the growing acceptance of ISO 2709 and urged national and international bodies concerned to promote the use of this standard. Organizations using ISO 2709 are, therefore, invited to notify Unesco accordingly. It was, however, felt that an extension to ISO 2709 was needed to permit a more efficient handling of correction records and a Task Group was established to prepare a report in advance of the 3rd meeting of the Working Group with a view to its submission to ISO/TC 46 for discussion at Helsinki.

The report was duly presented at the third meeting and contained three basic proposals: (1) the introduction of an optional fourth subfield, (2) character representation should not be in the standard itself and ASCII should not be made obligatory, and (3) use of alpha and alphanumeric tags should be permitted. The following supporting recommendations were also agreed: (1) the existing ISO 2709 standard must be retained as a valid implementation of any revised standard, and (2) any revision programme should not necessarily be restricted to the recommendations presented above. It was agreed that these recommendations should be submitted for consideration by ISO/TC 46.

With regard to character sets and character coding, TGI felt that no suitable standard existed at the present time and recommended supporting ISO/TC46/SC4/WG1.

As to level 2 (data fields and tagging structure), it was recognized that there was a need for the development of a common standard for data element definition and identification from which subsets could be developed for particular types of use.

In the studies carried out by TGI, the main literature types reviewed had been serials and monographs. The Working Group considered that the serials field did not require its further attention as a healthy collaboration had developed between ISBD(S) and ISDS as regards bibliographic description of serials as collective entites while the UNISIST Reference Manual (see Newsletter, Vol. I, No. 2) was primarily concerned with serial articles at the analytic level and used ISDS elements (ISSN, abbreviated key title) wherever an overlap occurred.

[To be continued in the next issue]

REPORT

IFLA ROUND TABLE OF EDITORS OF LIBRARY AND DOCUMENTATION JOURNALS

A report by B. Guha

It may be recalled that the Unesco organised a symposium of editors of documentation, library science and archives journals, in May 1972, with the objective of bringing together the editors of the main journals in the field to enable them to discuss ways and means of reaching closer co-operation and co-ordination (reported in the Annals, Vol 19 no 3 Sept 1972, 160-61). A number of important recommendations were adopted at this Symposium held in Paris.

Since then, the recommendations and the line of action proposed are being discussed at various levels. The IFLA has taken great interest in the matter and has been supporting the editors to pursue the Paris recommendations further to bring in a better bibliographical control of library and documentation literature and effect other improvement. At the 1973 Annual Councilmeeting of IFLA held at Grenoble a useful meeting of editors of journals was held which is being referred to as the Round Table.

The Round Table warmly supported the resolutions of the Unesco Symposium, particularly with regard to the encouragement of the establishment of indexing or abstracting services where these do not exist and the provision of summary translation of major articles in lesser known languages. There was also some discussion on the problem of journals in developing countries and journals with limited circulation. It was agreed that a clearing house should be set up at Loughborough University of Technology so that contacts of editors could be facilitated and, for instance, editors of journals in developing countries be put in touch with editors of well established journals, so that permission for reprinting could be obtained and additional sources of articles be explored. It washoped that editors in countries with well developed library systems would be prepared to help those who needed assistance and it was agreed that journals published in lesser known languages should be recommended to publish abstracts of major articles in more widely used languages. The Round Table agreed to recommend to the IFLA Executive Board that an annual mesting of editors of journals should take place withinthe frame-work of IFLA. The Grenoble meeting was chaired by Professor P Havard-Williams of the Loughborough University of Technology

As desired the next meeting of the editors was held along with the IFLA 40th General Council meeting at Washington on 18 November 1974. It was disclosed at this meeting that the IFLA Clearing House at Loughborough had received only a few requests for articles. Some established library journals had been approached to make available suitable material. The response had been positive in principle, but very little concrete assistance had transpired. A much more active policy should be established to activate the Clearing House idea.

It was also stressed that colleagues in developing countries should state their needs in very clear terms so that journals having manuscripts which they were not going to use themselves could pass them on. The Clearing House would like to receive copies of journals so as to obtain a clear picture of the type of information and articles they needed. The Chairman (Professor Havard-Williams) said that a newsletter appearing twice a year and listing materials wanted and available (stating their length) would be helpful. Such a newsletter should help the editors of established journals to find out what kind of needs existed in developing countries in this respect.

The following committee, proposed by the Chairman, was approved:

D. Borchardt (Australia)
B. Guha (India)
P. Lewis (U.K.)
Miss M.A. Rantalin (Finland)
Mrs P. Soltani (Iran)
P. Havard-Williams (U.K.)

In the meantime the work of the Clearing House has progressed to a certain extent and we are pleased to put out the following notice for the benefit of editors of library and documentation journals in India and the neighbouring countries.

Under the auspices of the IFLA Round Table of Editors of Journals, the Department of Library and Information Studies has set up a Clearing House for editorial material particularly to assist editors of journals in developing countries. The Clearing House aims to put editors needing material in touch with those who have a surplus of material or who are preparedto allow reprinting. Editors who are in need of material should write to:

REPORT

IFLA Journal Clearing House,
Department of Library and Information Studies,
Loughborough University of Technology,
LOUGHBOROUGH, Leicestershire. LE11 3TU.
U.K.

The Clearing House will endeavour to find editors of appropriate material and either communicate it via the Clearing House or arrange direct communication between those who need it and those who have it. Not only is it foreseen that material will be produced in journals in developing countries from those of industrialised countries, but also that articles in one developing country will be of interest in another and may be reprinted or reproduced.

Membership of the Clearing House is free but journals wishing to avail themselves of the services will be required to send one copy of each of their publications to the Clearing House at the above address.

It is proposed to issue a current contents list based on issues received in order to make the material more widely known. Material wanted and available will be listed periodically.

Attention is drawn to information required for the World List of Documentation, Library and Archives Journals which currently is being revised: if your journal has not done so, it is asked to write with the appropriate details to the Secretary General, FID, 7 Hofweg, The Hague, Netherlands.

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"ANNALS OF LIBRARY SCIENCE AND DOCUMENTATION"

under Rule 8 of the Registration of Newspapers (Central) Rules 1956

1	Place of Publication	Insdoc, Hillside Road, Delhi 12
2	Periodicity of its publication	Quarterly
3	Printer's Name	V. Ramachandran
	Nationality	Indian
	Address	Insdoc, Hillside Road, Delhi 12
4	Publisher's Name	V. Ramachandran
	Nationality	Indian
	Address	Insdoc, Hillside Road, Delhi 12
5	Editor's Name	B. Guha
	Nationality	Indian
	Address	Insdoc, Hillside Road, Delhi 12
6	Names and addresses of individuals who own the newspaper and partners or shareholders holding more than one per cent of the total capital.	Insdoc, Hillside Road, Delhi 12 (an organisation of the Council of Scientific and Industrial Research New Delhi)

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BOOK REVIEW

Resource sharing in libraries; why how, when, next action steps, ed. by Allen Kent. New York, Marcel Dekker, 1974. xi, 393p (Books in library and information science, vol. 8). ISBN 0-8247-6130-8 $ 24.50. [Reviewed by B Guha]

The volume is an outcome of the papers and discussions of a conference on resource sharing held in April 1973 at Pittsburgh. The conference was jointly sponsored by a number of agencies and was designed for presidents and librarians of institutions of higher education.

The book includes 17 papers grouped under four important aspects of resource sharing viz., the rationale, the mechanics, when to proceed, and how to proceed. The rationale behind the concept of resource sharing and the sense of urgency with which it need be pursued have all been very well presented by the editor in his introduction. It appears, it has become not only prohibitively costly but completely impossible for libraries to be self-sufficient for many other reasons. The solution lies in resource sharing and there is no reasonable alternatives to effective resource sharing.

In the key paper on the rationale, by John Fetterman, it has been clarified that by 'library resource' is meant any and all of the materials, functions, and services which constitute a modern library system. It is the amalgamation of people, processes, ideas, materials and money which form the substance of a library and can be described as its resources. This definition of resource provides the background and the context in which resource sharing has to be considered. The papers in the book together discuss the problems of resource sharing in this vastly extended context of library resource. That there is a need for sharing or library co-operation has been recognised at many quarters. Many governmental and professional commissions in the United States have, on many occasions, indicated this. But there are many barriers, like psychological barriers, lack of information and experience, traditional and historical barriers, physical and geographical barriers, and legal and administrative barriers. This listing of barriers to cooperation will point out that the people are the more formidable barrier than the technology of sharing. It means we must struggle to "cooperate with each other inspite of our belonging to the human race, which also, is not inclined to be cooperative."

The issues and problems relating to 'how' to share resources have been dealt competently in the key paper by John P Immroth in part two. Different aspects like acquisition, processing, cooperative storage and delivery services have all been discussed in separate papers also. Effective sharing would mean some reorganisation and rethinking in all these aspects. The mechanics of all these have been discussed in detail.

In part three of the book the question 'when to proceed' has been posed. The key paper of this part tackles the question by giving a detailed account of network technology for library resource sharing based on the current state of information systems technology. All the papers in this part together point out to the inevitable conclusion that readily available information storage, information processing, and information transfer technology can support effective library sharing. Hence, the answer to the question when to proceed must be 'now'.

In the last part of the book the theme of the papers is 'how to proceed'. The three papers included here provide a good survey of some of the major cooperative efforts or consortia of libraries in the U.S.A. A number of new consortia have also been proposed.

Although the contents of the book have an American bias, yet it cannot be said that the basic issue of sharing or library cooperation is in any way a problem of a developed and affluent community. The basic issue dealt in the book is as much relevant to a developing country like India as it is to U.S.A. Our librarians are much more harassed by steep budget-cuts, demand for more materials and services, and frustrations. Of course, the sophisticated information systems technology, discussed in the book, will not be available to us. But the message of the book is important for us too and that is, building a dam by way of library resource sharing is the only effective line of defence to withstand the information flood and inflation. This message is not only important for librarians but is equally so for planners and administrators.

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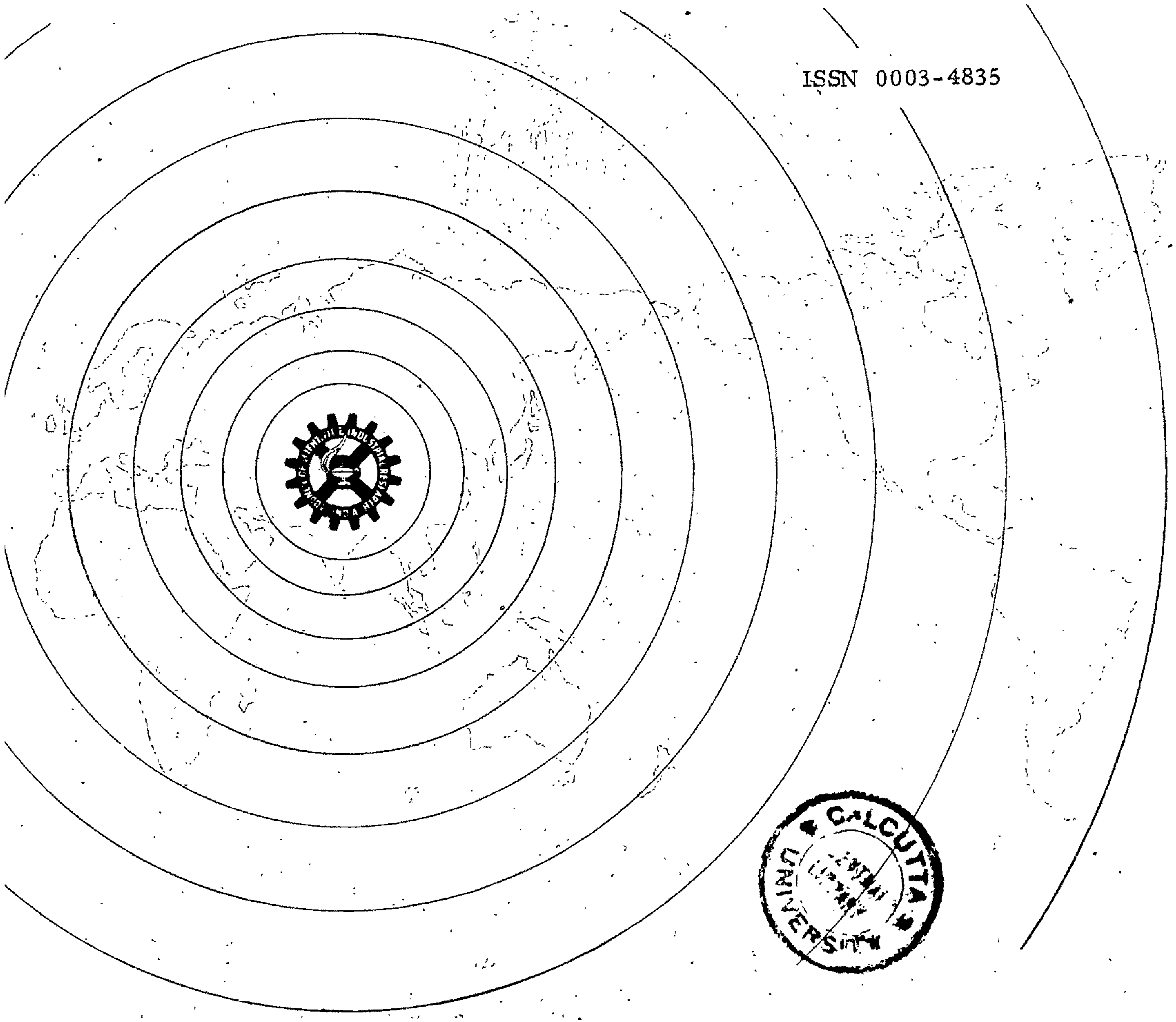
Printed and Published by V. Ramachandran at Insdoc, Hillside Road, Delhi-12

ISSN 0003-4835



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INDIAN NATIONAL SCIENTIFIC DOCUMENTATION CENTRE DELHI - 12

VOL 22 NO 2 JUNE 1975

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Annals of Library Science and Documentation is published by INSDOC as a quarterly. The dates of publication are 31 March, 30 June, 30 September, and 31 December.

Annals of Library Science and Documentation is a Medium for publishing original contributions in the field of library classification, cataloguing, bibliographic organisation, documentation techniques, mechanical methods of documentation, bibliographic standardisation, reprographic methods, etc.

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ON CHANGE OF TITLES OF PERIODICALS
Part 1

B Guha
B K Sen
R N Neogi
Insdoc, New Delhi-110012

This is the first communication on the findings of a continuing study on the causes of change of titles of periodicals. The study is based on a sample of about 1000 periodicals which have changed title at least once. In this communication the nature and pattern of change of about 200 titles have been analysed under five broad categories.

1 Introduction

The earliest scientific periodical viz, the Philosophical Transactions continues under the same title even after three hundred years of its continuous existence. But this appears to be a rare phenomenon in the world of periodicals. Periodicals do change their titles from time to time due to various reasons. This is quite well known to librarians and bibliographers. In fact they have to face quite a few problems as a consequence of such changes. All cataloguing codes invariably prescribe a set of rules to tackle this ticklish question of change of titles of periodicals. However, there does not seem to be complete unanimity among these rules, which suggests how harassed the cataloguers must be as a consequence of title changes. One of the code makers viz., Dr S R Ranganathan had listed the phenomenon of change of title as one of the 'idiosyncrasies' of periodical publications. The use of this expression, apart from other considerations, perhaps, signified the intensity of this harassment. However, we are not going into the cataloguing problems of change of titles.

Whatever may be the prescriptions of the cataloguing codes, one thing can be said with complete certainty that everybody will be happy if periodicals do not change their titles at all or change less frequently. But how to create such a condition. Surely, one point of approach would be to study carefully the changes that have already occurred and find out the reasons for such changes. This would ultimately help in titling periodicals in such a way that the need for change is felt less frequently. The present study is essentially of this nature, intended to find out the basic reasons behind title changes and piece together the experiences of publishers of such periodicals which will help us in preventing frequent title changes.

2 Study Sample

To make such a study, a representative sample is necessary. For the present study a sample of about 1000 journals has been taken. These journals are from the Regional Union Catalogue of Scientific Serials Bombay-Poona, compiled and published by INSDOC in 1973. All the journals listed in it were current at the time of compilation. Only English language journals have been taken into this sample including a few translated journals. Taking the sample from the Bombay-Poona Catalogue will ensure that most of the items will be well known and quite familiar to the librarians and library users in India. It may also be mentioned that the catalogue lists a total of about 5000 titles out of which about 1000 titles have come into our sample as they have changed titles, at least once. This gives an immediate measure of the incidence of the phenomenon of title change.

3. Sorting into Preliminary Categories

The titles in the sample have been sorted into a few preliminary categories based on the nature of change so that a close and objective study into the causes of each change is possible. For the purpose of this categorisation only the last change has been taken into consideration where there have been more than one changes. A change which is observed due to more than one causes has been considered under different categories. The preliminary categories that are being considered in this paper are as follows:

a) Dropping out, addition or change of frequency denoting terms in the title.

b) Broadening of the scope of periodicals by the addition of new subject terms.

c) Broadening of the scope by changing the subject terms in the titles due to emergence of new subjects.

d) Narrowing down of scope by dropping out subject terms from titles.

e) Narrowing down of scope by dropping out other terms.

4 General Pattern of Change

A preliminary observation on the titles of periodicals in general may be appropriate here. Usually the title of a periodical consists of words denoting (a) nature of the periodical e.g., journal, bulletin, annals, transactions, etc (b) the subject scope of the periodical e.g., physics, sound, ultrasonics, etc. (c) frequency denoting terms like monthly, quarterly, annual, etc (d) names, in full or in abbreviated form, of sponsoring agencies, (e) national or territorial scope or origin e.g., Indian, British, American and (f) articles, prepositions and other auxiliaries and connectives. It may, however, be mentioned that the order of the words in the title may not necessarily be the same as mentioned above. It may be seen now that the need to change a word or words in a title in any of the above categories may arise for different reasons. Thus a bulletin may change over to journal, the subject scope may change from physics to applied physics, the frequency may change from quarterly to monthly, from American journal one may change to international journal, and so on. Most of the 1000 titles that we are going to consider are expected to follow this pattern

In the life span of a periodical there may come, unfortunately, much more complexities than mentioned above. We are of course, concerned here with only those complexities that affect the title of a periodical. It has been observed that in the world of periodicals there are marriages (by amalgamation), very much settled on the earth, and alas, divorces (by splitting) also. The effects of both these phenomena are immediately felt on the title.

It would be observed, as we go through the various categories, that a periodical may change its title as a consequence of a number of causes simultaneously. However, we have considered each change separately under different appropriate categories. In other words, a change which is due to a number of causes has been considered more than once under the relevant categories.

A category-wise consideration of the changed titles of the sample are being considered in the succeeding sections.

5 Category-wise Analysis of Changed Titles

51 Dropping of Frequency Denoting Terms

The frequency of a journal is often made very prominent by indicating it in the title itself e.g., Quarterly journal of ..., Monthly bulleting of the ... and so on. This practice, no doubt, makes the title of a periodical quite informative. But, at the same time, makes the title susceptible to change with any change in the frequency of such a periodical. In some cases the addition of the extra word indicating the frequency of the publication does not read well or even makes the title unnecessarily long. Due to these reasons we found quite a few examples of change of titles by dropping the word or words indicating the frequency. A complete list of such cases is provided in Table 1 below.

Table 1 - Dropping of Frequency Denoting Terms from Titles

	Changed to	Changed from [last change with dates]
1.	Automobile Abstracts	Monthly Summary of Automobile Engineering Literature, 1955-61
2.	Bell Telephone Magazine	Bell Telephone Quarterly, 1922-40
3.	Bibliography of Indian Fisheries	Quarterly Bibliography of Current Indian References on Fisheries and Allied Subjects, 1962/63-64/65
4.	Biochemical Reviews	Annual Review of Biochemical and Allied Research in India, 1930-35
5.	Chemical Engineer (issued under cover with the Transactions of the Institution of Chemical Engineers (London) since 1956)	Quarterly Bulletin. Institution of Chemical Engineers (London), 1925-55
6.	Duns Review	Dun and Bradstreet Monthly Review, 1933-36.
7.	Engineering Index	Engineering Index Annual, 1906-18

Continued

8.	Fire Journal	Quarterly of the National Fire Protection Association (Boston, Mass). 1907-64
9.	Hoards Dairyman	Jefferson County Union Weekly Dairy Edition, 1870-85.
10.	Hosiery Trade Journal	Knitters Circular and Monthly Record, 1894-99.
11.	Indian Coffee	Indian Coffee Board Monthly Bulletin, 1943-50
12.	Industrial India	Monthly Review of Industry, 1950-55
13.	Journal of the American Statistical Association	Quarterly Publications of the American Statistical Association, 1920/21
14.	Journal of the Indian Chemical Society	Quarterly Journal of the Indian Chemical Society, 1924/25-27.
15.	Journal of the Rubber Research Institute of Malaya	Quarterly Journal of the Rubber Research Institute of Malaya, 1929-31
16.	Knitting Industry	Hosiery Industry Weekly, 1948- ?
17.	Machine Tool Review	Monthly Review of Modern Machine Shop Practice, 1913-18
18.	Meteorological Observations in New Zealand	Monthly and Annual Meteorological Observations. New Zealand 1866-1927
19.	National Safety News	Weekly Letter. National Safety Council (Chicago), 1917-19
20.	North Dakota Farm Research	Bimonthly Bulletin, Agricultural Experiment Station. North Dakota, 1938-58.
21.	Papers and Proceedings of the Royal Society of Tasmania	Monthly Notices of Papers and Proceedings of the Royal Society of Tasmania, 1963-74
22.	Psychiatry Digest	Journal of Clinical and Experimental Psychopathology and Quarterly Review of Psychiatry and Neurology, 1954-62.
23.	Review of Surgery	Quarterly Review of Surgery, 1961
24.	Rubber Journal	Rubber and Plastics Weekly, 1961-63
25.	Sales Management	Sales Management and Advertisers Weekly 1928-29
26.	Social Biology	Eugenics Quarterly, 1954-68
27.	Sulphur	Quarterly Bulletin. British Sulphur Corporation, 1955-56
28.	Indian Railway Technical Bulletin	Quarterly Technical Bulletin, Railway Board, India

The first item in the list viz., Automobile Abstracts, had to change its title thrice since 1942, to get to the present title. The immediate previous title had the frequency mentioned in it. viz., Monthly Summary of Automobile Engineering Literature. The present title is quite elegant compared to all the previous titles. The second item in the list viz. The Bell Telephone Magazine derived its present title from Bell Telephone Quarterly. The well-known statistical journal, the Journal of the American Statistical Association also experimented with the inclusion of a frequency term in its title, though only for a short time. It changed its title in 1920-21 from Publications of the American Statistical Association to the Quarterly Publications of the American Statistical Association. But within one year it decided to change the title to the present one by dropping the frequency term.

The next item, the Journal of the Indian Chemical Society provides the most simple example of dropping the frequency term, as it was formerly titled as the Quarterly Journal of the Indian Chemical Society. This change, as it can be easily realised, was necessitated by the change of frequency in the publication of the journal. The frequency became monthly after the first four volumes (ending with 1927) but the new frequency term i.e. monthly, was not added to the changed title. Evidently, the Society learned from experience the risk involved in indicating the frequency in the title. The next item, the Journal of the Rubber Research Institute of Malaya, had also a similar change and experience.

The journal Knitting Industry has changed its title four times since 1923. In all the previous three titles the frequency was mentioned. It has been weekly in all the cases. Only in the present title this has been dropped. It is hoped the present title will be more lasting. The journal Review of Surgery has gone through five changes since 1943, but the present title is just a slight modification of its earlier title which was with a frequency-denoting word. It was Quarterly Review of Surgery.

A simple titile like the Rubber Journal had quite a few trial and error experiments . In fact it had six changes since 1884. The present title was also once adopted but had a short life from 1957 to 1960. However, in the last changes the frequency - indicating term weekly was part of the title.

The journal Sales Management has changed over to the present title from Sales Management and Advertisers Weekly in 1929. It is gratifying to note that there has been no necessity for any change since then. The next title in the list Social Biology had a radical change from its previous title Eugenics Quarterly. It appears the occasion for this change was also utilised to drop the word quarterly from the title. It may be mentioned that the journal continues to be published quarterly.

The next journal in the list viz., Sulphur also had a complete change , in 1957, from its immediate previous title which was Quarterly Bulletin, British Sulphur Corporation . Here again, the change rejected the frequency-indicating term although it was there in all the previous titles. The frequency of the journal also changed to bi-monthly.

The last item in the list viz., Indian Railway Technical Bulletin has changed in 1954 from Quarterly Technical Bulletin, Railway Board, India. Apart from other changes, the term quarterly has been very conveniently dropped during the change. The journal, however, continues as a quarterly.

Annotation - An analysis of the above 28 cases of title changes reveals that the frequency-denoting terms from titles have been dropped mainly for two reasons. Firstly, when the frequency of a journal changed it necessarily meant the change of title also. Secondly, when a title had to be changed for some other reasons the frequency-indicating term was also dropped. This was apparently done so that the new title could be more elegant and simple, even if less informative, or the frequency term did not fit well grammatically in the new title, or it might have been realised by the publishers that the retention of frequency terms might lead to further changes in titles.

Addition of frequency denoting terms

Inspite of the risk associated with the inclusion of frequency indicating terms in titles, it was curious to find at least three examples where titles have been changed to add frequency terms in the new titles. Surely, they are going against the trend. The following is the list of such changes:

Table 2 - Titles Having Added Frequency Terms

Changed to	Changed from
1. Indian Textile Industry Annual	Indian Cotton Textile Industry, 1939-62/63
2. Menninger Quarterly	Menninger Newsletter, 1947-49
3. Quarterly Bulletin on Solar Activity	Character Fingures of Solar Phenomena, 1917-38

It is observed that in all the above three cases the change in the title comes for the first time. May be, the publishers of these titles are not fully aware of the risk involved, in such titles.

Annotation. - It appears that the frequency term in the title of a periodical, apart from indicating the frequency, has another function also. It is usual in the title of a periodical to have a term indicating, the type of periodical e.g., journal, bulletin, annals, transactions, etc. However, much of the difference between these expressions are now blurred. They are used in titles just to indicate that this a periodical. The frequency term also is used very often in this sense. In other words a quarterly usually means a quarterly journal although a quarterly rhythm is observed in a number of activities like tax payment, insurance premium payment, examinations, etc. It may be realised that in the first two titles in Table 2 , the terms 'annual' and 'quarterly' have been used exactly in this sense. In fact titles like 'Indian textile industry journal' and 'Menninger bulletin' could have been as appropriate as the present titles if not better. In the third title in Table 2, since the term 'bulletin' has been added, the term quarterly could have been easily avoided.

52 Change of Frequency Denoting Terms

There is only one example where a periodical changed its title because of change in frequency and at the same time included the new frequency term in the changed title. The title is Quarterly Bulletin of Coal Statistics for Europe, which was being published under the title Monthly Bulletin of Coal Statistics during 1947-51.

6. Change of Titles due to Broadening of Scope of Periodicals

Considering the phenomenon of increasing specialisation in scientific research, it would be quite natural to expect that scientific periodicals also will get more and more specialised by restricting the scope of their contents. There is a trend like that. However, it should be a bit surprising, that so many periodicals are trying to swim against this trend. In our sample we have collected as many as 48 cases of title changes due to braodening of scope of periodicals. It must be pointed out that it has not bee possible to check in all cases whether a changed title really means a change in the scope of a periodical. Addition of new subject terms in titles has been taken to mean change in scope. The titles are listed in Table 3 below.

Table 3 - Addition of New Subject Terms in Titles to Broaden the Scope of Periodicals

	Changed to	Changed from (last change with dates)
1.	Advances in Carbohydrate Chemistry and Biochemistry	Advances in Carbohydrate Chemistry, 1345-68
2.	American Journal of Tropical Medicine and Hygiene	American Journal of Tropical Medicine, ?
3.	Australian Chemical Processing and Engineering	Australian Chemical Processing, 1962-64
4.	Australian Refrigeration, Air Conditioning and Heating	Refrigeration Journal, 1947/48-62/63.
5.	Biological and Agricultural Index	Agricultural Index, 1916/18-64
6.	British Journal of Preventive and Social Medicine	British Journal of Social Medicine, 1947-52
7.	Canadian Metal Working/Machine Production	Canadian Metal Working, 1957-64
8.	Canadian Welder and Fabricator	Canadian Welder, 1952-62
9.	Cement, Lime and Gravel	British Limemaster, 1926/27-28
10.	Chemical and Pharmaceutical Bulletin	Pharmaceutical Bulletin, 1953-57
11.	Claycraft and Structural Ceramics	Claycraft, 1927-63
12.	Clinical Orthopaedics and Related Research	Clinical Orthopaedics, 1953-62
13.	Communications on Pure and Applied Mathematics	Communications on Applied Mathematics, 1948
14.	Computer and Control Abstracts	Control Abstracts, 1966-8.
15.	Construction Methods and Equipment	Construction Methods, 1926-27.
16.	Current Contents of Space, Electronics and Physical Science	Current Contents of Space and Physical Sciences, 1961-62.
17.	Current Papers on Computers and Control	Current Papers on Control, 1966-68

Continued

18. Current Papers in Electrical and Electronics Engineering	Current Papers in Electrotechnology, 1967-68.
19. Dental Magazine and Oral Topics	Dental Magazine, 1919-28
20. Drug and Cosmetic Industry	Drug Markets, 1926-32
21. Farm Chemicals and Croplife	Farm Chemicals, 1951-70
22. IEEE Transactions on Audio and Electrocoustics	IEEE Transactions on Audio, 1963-65
23. IEEE Transactions on Industrial Electronics and Control Instrumentation	IEEE Transactions on Industrial Electronics, 1963
24. IEEE Transactions on Instrumentation and Measurement	IRE Transactions on Instrumentation, 1952-62
25. Indian Journal of Biochemistry and Biophysics.	Indian Journal of Biochemistry, 1964-70
26. Indian Oil and Soap Journal	Indian Soap Journal, 1934-49
27. Industrial Medicine and Surgery	Industrial Medicine, 1932-49
28. Insulation/Circuits	Insulation, 1955-70
29. Irrigation and Power Research in India	Irrigation Research in India, 1953-?
30. Journal of the Institution of Engineers (India) - Industrial Development and General Engineering Division	Journal of the Institution of Engineers (India) - General Engineering Division, 1961-68/69
31. Journal of Projective Techniques and Personality Assessment.	Journal of Projective Techniques, 1950-63
32. Journal of Speech and Hearing Disorders	Journal of Speech Disorders, 1936-47
33. Journal of Thoracic and Cardiovascular Surgery.	Journal of Thoracic Surgery, 1931-59
34. Journal of Tropical Medicine and Hygiene	Journal of Tropical Medicine, 1898/99-1906
35. Machine and Shop and Engineering Manufacture	Machine Shop, 1964
36. Machinery and Production Engineering	Machinery, 1912-65
37. Machinery Lloyd and Electrical Engineering	Machinery Lylod, 1939-63
38. Marine Engineer	Marine Engineer and Naval Architect, 1933-?
39. Metallurgia and Metal Forming	Metal Forging, 1966-71
40. Meteorological and Gesastrophysical Abstracts	Meteorological Abstracts and Bibliography, 1950-59
41. Molecular Crystals and Liquid Crystals.	Molecular Crystals, 1966-69
42. Papers in Physical Oceanography and Meteorology	Meteorological Papers. Massachusetts Institute of Technology, 1930/32

Continued

43.	Plumbing Trade Journal and Heating Review	Plumbing Trade Journal, 1921-62
44.	Progress in Elementary Particle and Cosmic Ray Physics	Progress in Cosmic Ray Physics, 1952-56
45.	Stem and Heating Engineer	Steam Engineer, 1931/32-63
46.	Telephone Engineer	Telephone Engineer and Management, 1909-41
47.	Quarterly Journal of Experimental Physiology and Cognate Medical Sciences	Quarterly Journal of Experimental Physiology, 1908-38
48.	Welding and Metal Fabrication	Welding , 1942-50

In the first few titles of the list, a particular trend of change is discernible. A change from Advances in Carbohydrate Chemistry' to 'Advances in Carbohydrate Chemistry and Biochemistry or from American Journal of Tropical Medicine to American Journal of Tropical Medicine and Hygiene, and similar changes indicate a straight forward change or broadening of the scope of the periodicals. The third title viz., American Perfumer and Cosmetics, however, cannot be said to have followed this straight path. This periodical has been experimenting with the title for quite some time as it has already changed title five times since 1906. For three years, during 1936-39, it was known as the American Perfumer, Cosmetics, Toilet Preparations. This may indicate that the scope of the periodical was even greater than what is suggested by the present title. But this is not so.

A few periodicals in the list have tried to make their titles more expressive, if not broader in scope, by adding extra words. Thus, British Limemaster has changed to Cement, Lime and Gravel. Similarly, Claycraft has changed to Claycraft and Structural Ceramics. The next title in the list vis., Clinical Orthopaedics and Related Research has changed from Clinical Orthopaedics. This gives the apparent impression that the scope has been broadened. But unfortunately the expression 'related research ' is very vague and as a consequence the new extended scope of the journal remains undefined. In fact the new title has no advantage over the previous one. It would not be surprising if the periodical reverts back to its old title.

One more title in the list is also of the same nature. The Quarterly Journal of Experimental Physiology and Cognate Medical Sciences has changed from Quarterly Journal of Experimental Physiology. Here again, it may be seen the expression 'cognate medical sciences' does not express very much the nature of changed scope. On the other hand it lengthens the title unnecessarily.

Annotation. - In this section we have considered a set of 48 periodicals which have changed their titles by adding new word or words with their former titles with a view to indicate the broadening of the scope or to make the titles more expressive of the nature of the contents and scope of the periodicals. As a consequence the titles have become longer in all cases. The 48 periodicals had an average length of 2.7 words per title before change. The average length increased to more than 4 words per title after change. It has also been pointed out that in some cases the addition of extra words has not materially changed the scope and contents of the periodicals. However, all the titles have changed by using words denoting new subjects.

61 Broadening of Scope due to Emergence of a New Subject.

In this section we are considering a set of 22 periodicals which have changed titles to reflect the broadening of the scope by replacing the previous subject terms with new subject terms. The nature of change is well reflected even in the first two titles (Table 4). In the first title the subject 'aviation medicine' was replaced by the broader subject aerospace medicine. In the second title also the expression 'space' has been added to indicate the expanded nature of the scope. Another title, we find, has been changed from Canadian Aeronautical Journal to Canadian Aeronautics and Space Journal, introducing again the word 'space'. All these changes occurred between the years 1959 to 1963. It can be recalled that this period saw the beginning of the space age. Two more changes of this nature are in the titles Progress in Aerospace Studies from Progress in Aeronautical Sciences, and Review of Geophysics and Space Physics, from Reviews of Geophysics. Inclusion of the expression 'space', in the above titles, signalled the advent of a new subject and hence, broadening the scope of the respective periodicals also.

Similar trend can be observed in other titles due to the emergence of other new subjects. The third title in the list has changed to American Journal of Roentgenology, Radium Therapy and Nuclear Medicine in 1952, from American Journal of Roentgenology and Radium Therapy. The addition of the expression 'nuclear medicine ' is significant in this case. The present journal had added the word documentation to announce that the journal not only deals with problems of library science but covers topics on documentation also.

Running down the list of periodicals in Table 4 we find a number of new subject terms have been introduced in a number of changed titles apart from the cases considered above. Thus, in the field of Medicine the expression 'rehabilitation', has come (item no. 5), in Chemistry the term 'interface' has come (item nos 10 and 12), along with radio and electrical engineering the term 'electronics' has also appeard (item nos. 15, 18 and 20). Similarly, in the field of Biology, the speciality 'molecular biology' has made its influence felt in item no. 16. Two specialities of Surgery viz., neurosurgery and plastic surgery, have made their importance felt in item nos. 13 and 22.

Table 4 - Title Changes Showing Broadening of Scope due to Emergence of New Subjects

	Changed to	Changed from (last change with dates)
1.	Aerospace Medicine	Journal of Aviation Medicine, 1930-59
2.	Air and Space Age	Air Age, 1956-63
3.	American Journal of Roentgenology, Radium Therapy and Nuclear Medicine	American Journal of Roentgenology and Radium Therapy, 1923-51
4.	Annals of Library Science and Documentation	Annals of Library Science, 1954-63
5.	Archives of Physical Medicine and Rehabilitation.	Archives of Physical Medicine, 1926-52
6.	British Journal of Mathematical and Statistical Psychology	British Journal of Statistical Psychology, 1952/53-64
7.	Canadian Aeronautics and Space Journal	Canadian Aeronautical Journal, 1954-61
8.	Computers and Automation	Computing Machinery Field, 1952-53
9.	Deep-Sea Research and Oceanographic Abstracts	Deep-Sea Research, 1953/54-61
10.	Journal of Colloid and Inferface Science	Journal of Colloid Science, 1946-65
11.	Journal of Comparative and Physiological Psychology	Journal of Comparative Psychology, 1921-46
12.	Journal of Electroanalytical Chemistry and Interfacial Electrochemistry	Journal of Electroanalytical Chemistry, 1959-66
13.	Journal of Neurology, Neuro-Surgery and Psychiatry	Journal of Neurology and Psychiatry, 1938-43
14.	Journal of the Society of Motion Picture and Television Engineers (New York).	Journal of the Society of Motion Picture Engineers (New York), 1930-49.
15.	Proceedings of the Institutition of Radio and Electronics Engineers, Australia	Proceedings of the Institution of Radio Engineers, Australia.
16.	Progress in Nucleic Acid Research and Molecular Biology	Progress in Nucleic Acid Research, 1963
17.	Progress in Aerospace Studies	Progress in Aeronatical Sciences, 1961-70

Continued

18.	Radio Electronics —	Radio-Craft, 1929-47/48
19.	Reviews of Geophysics and Space Physics	Reviews of Geophysics, 1963-69
20.	Science Abstracts - Sec B Electrical and Electronics Abstracts	Science Abstracts - Sec B Electrical Engineering Abstracts
21	Water and Water Engineering	Water, 1899-1907
22.	Yearbook of Orthopedics, Traumatic and Plastic Surgery	Yearbook of Orthopedics and Traumatic Surgery, 1947-59/60

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62 Broadening of Scope due to a Shift from a Narrower to a Broader Subject

In this section we have a set of 24 periodicals which have changed titles to indicate the broadening of scope, but this has been done in a different way. The change is not by the addition of new subject terms as it was in the previous section, but by replacement of the earlier subject terms by new subject terms. Typical examples of such change are, Journal of Insect Pathology changing over to Journal of Invertebrate Pathology or the Journal of Dental Medicine changing over to Journal of Oral Medicine.

The second title in the list (Table 5) started from the very simple single-worded title Highways. It is known single-worded titles have certain advantages — they are easy to remember, easy to transcribe and there is no problem of abbreviation. If suitably coined such titles can be almost eternal. The title Nature is perhaps the best example of this kind. Inspite of such advantages the periodical Highways had to change its title with the very second volume in 1929. This is precisely because the title was not properly coined. The periodical is the organ of the Cement and Concrete Association of Australia. A title like Highways severly restricts the scope and interests of the Association. The interests of an association like the above can be revealed only by terms like cement and concrete, cement construction, construction, building, builders, etc. This was exactly what was done. That the changed title was more appropriate is borne out by the fact that eversince 1929 ie, from the second volume onwards there has not been any further change of title.

Item 6 in the list (Table 5) had some interesting experiments. It is the organ of the American Geophysical Union and hence the present title appears to be quite appropriate. The periodical, however, attained the present title in two stages. From 1896 to 98, corresponding to the first three volumes, it was known as Terrestrial Magnetism which was then changed to Terrestrial Magnetism and Atmospheric Electricity. The second title continued from 1899 to 1948. The present title indicates a considerable broadening of scope by bringing in the term geophysical.

Next two titles (items 7 and 8) reflect straight forward broadening of scope from insect pathology to invertebrate pathology and from dental medicine to oral medicine. The second periodical is the organ of the American Academy of Dental Medicine. The title has gradually disconnected itself from the name of its sponsoring agency. To start with the title was - Journal, American Academy of Dental Medicine which was then changed to Journal of Dental Medicine and finally the present title Journal of Oral Medicine.

In the titles of three journals (item nos. 9, 10 and 16) the term 'materials' has come very prominently. They reflect the development of the new discipline of materials engineering and materials science which were previously, designated by the not-too-happy expressions of 'testing of metals and 'properties of matter'. The 10th item had as many as five changes and in all the titles the expression non-destructive testing was very prominent. This was so because of two reasons. Firstly, the journal being the organ of the Society for Non-destructive Testing it was quite natural to include in the title the substantive portion of its name that reflected the Society's interest. Secondly, the expressions materials testing, materials engineering, etc. were not in currency in those days.

The periodical Military Medicine (item no. 12) had a series of title changes. This being the organ of the Association of Military Surgeons of the United States it started with the very obvious and simple choice of Transactions of the Association of Military Surgeons of the United States in 1891 and in all the subsequent changes, three in all, the expression military surgeon was very prominent. The present title is for the first time completely free from the name of the sponsoring institution and it suggests the broadening of the scope of the journal also.

63 Broadening of Scope by Changing other Elements in the Title.

In the preceding sections we have considered change of titles where broadening of scope have been indicated mainly by the substitution or addition of subject terms in the titles. In this section we are considering 6 titles where non-subject terms have

Table 5 - Broadening of Scope due to a Shift from a Narrower to Broader Subject

	Changed to	Changed from (last change with dates)
1.	Allis-Chalmers Engineering Review	Allis-Chalmers Electrical Review, 1936-63
2.	Constructional Review	Highways, 1928
3.	Excavating Engineer	Steam Shovel News, 1905-12
4.	FAO Fisheries Technical Papers	FAO Fisheries Biology Technical Papers, 1960-64?
5.	Ichthyologica	Aquarium Journal, 1928-65
6.	Journal of Geophysical Research	Terrestrial Magnetism and Atmospheric Electricity, 1899-1948
7.	Journal of Invertebrate Pathology	Journal of Insect Pathology, 1959-64
8.	Journal of Oral Medicine	Journal of Dental Medicine, 1946-65
9.	Materials Engineering	Materials in Design Engineering, 1957-67
10.	Materials Evaluation	Non-Destructive Testing, 1960-63
11.	Medical Research Engineering	American Journal of Medical Electronics, 1961-66
12.	Military Medicine	Military Surgeon, 1907-54
13.	Minerals Processing	Nonmetallic Minerals Processing, 1960-62
14.	Ohio Journal of Science	Ohio Naturalist, 1900-15
15,	Organic Chemical Bulletin	Synthetic Organic Chemicals, 1927-47
16.	Progress in Materials Science	Progress in Metal Physics, 1949-59
17.	Quarterly Journal of Library of Congress	Quarterly Journal of Current Acquisitions, Library of Congress, 1943/44-63.
18.	Radio Engineering and Electronic Physics (English translation of Radio-tekhnika i El-ektronika)	Radio Engineering and Electronics, 1957-61
19.	Reactor Materials	Reactor Core Materials, 1958-61
20.	Textile Industries	Cotton, 1898-1946
21.	Textile Organon	Rayon Organon, 1935-51
22.	Tooling and Gaging	Automative and Aircraft Tooling and Gaging, Vol. 5(5),-12(11)
23.	Water Resources Journal	Flood Control Journal, 1949-60
24	Yearbook of Medicine	Yearbook of General Medicine, 1933-48

also been changed or other changes have been made as a result of which the new titles give the impression of broadening of scope. The titles are listed in Table 6 in the next page.

In the first title the change is more in the nature of an administrative adjustment. The volume numbering of the earlier publication continues simultaneously through the renamed title. The second title also, in a sense, reflects similar adjustments as a result of renaming or reallocating of the sponsoring agencies in the administrative hierarchy.

The third title in the list brings out the true character of the present category. The change from British universities to British universities and colleges is definitely an indication of the broadening of the scope of the periodical, but this has been done by changing non-subject terms in the title. Had the change been to something like scientific and humanities research ...., then the change would have been in the nature of broadening of scope by alteration of subject terms, considered earlier.

The fourth title in the list had actually one more change. The journal is a publication of the British Scientific Instrument Research Association. When it started in 1946 it came out with the most obvious and simple title the Bulletin of the British Scientific Instrument Research Association, under which label it continued till 1959. The first change completely removed the name of the sponsoring agency from the title which was as simple and slim as the Instrument Abstracts. The new title, however, proved to be short-lived. In 1968 the name of the sponsor was again brought into the title in an abbreviated form and to bring out the nature of the publication more clearly the word reviews was also added. This is how the present title has come into existence.

The last two examples of title changes in the list are of the same nature. In both the cases the nature of the publications appears to have changed rather than the subject scope. Thus, in one case Statistical newsletter has been changed to Statistical newsletter and abstracts and in the other case Transactions has been changed to Transactions and studies.

Counting of words in titles reveal that in all the six titles the number of words per title has increased. The average number of words per title was 7.6 before change which rose to 10.1 after the change.

7 Narrowing down of Scope by Dropping Out Words from Titles.

As has been said earlier, narrowing down or restricting the scope of periodicals should be considered quite natural considering the tendency of the increased specialisation in most of the subjects. In this section we are considering 47 titles, where this trend is clearly discernible. Here again, it must be emphasised, we have depended heavily on the actual terms introduced or deleted in the titles. The titles are listed in Table 7 in next page.

The second title in this list (Table 7) is a typical example of this change. This title has changed to American Journal of Surgery from American Journal of Surgery and Gynecology. Thus, dropping of the last word, viz., Gynecology indicates restricting the scope of the journal. The new title addresses itself to one group of specialists only. The first, third and fourth titles and a few more are examples of such straight forward changes of narrowing down of scope. There are, however, examples of more complicated changes. The title Australian Mining has come through four successive changes. Previously

Table 6 - Broadening of Scope by Change of other Elements in Titles

Changed to	Changed from [last change with dates]
1. Indian Journal of Physics and Proceedings of the Indian Association for the Cultivation of Science.	Proceedings of the Indian Association for the Cultivation of Science, 1915-26.
2. Monthly Bulletin of the Ministry of Health and the Public Health Laboratory Service. Great Britain.	Monthly Bulletin of the Emergency Public Health Laboratory Service, Ministry of Health, Great Britain, 1941-43.
3. Scientific Research in British Universities and Colleges.	Scientific Research in British Universities, 1949/50-1960/61.
4. SIRA Abstracts and Reviews.	Instrument Abstracts, 1959-67.
5. Statistical Newsletter and Abstracts, Indian Council of Agricultural Research.	Statistical Newsletter, Indian Council of Agricultural Research, 1951/52-62/63.
6. Transactions and Studies of the College of Physicians of Philadelphia	Transactions of the College of Physicians of Philadelphia, 1875-1937.

the title had in it the expressions 'engineering' and chemical engineering'. Similarly, the next title Automotive Industries has also gone through a number of changes since 1899. The last change has been from Automotive and Aviation Industries, hence, it has been placed in this group. Dropping of the term 'Aviation' surely indicates the narrowing down of the scope. Some of the other names by which the same journal was known earlier were Automobile, Automobile and Motor Review, Automobile and Automotive Industries, etc.

Table 7 - Dropping of Terms from Titles to indicate Narrowing down of Scope of Journals

Changed to	Changed from (last change with dates)
1. American Journal of Orthodontics	American Journal of Orthodontics and Oral Surgery, 1938-47
2. American Journal of Surgery	American Journal of Surgery and Gynecology, 1890-1904
3. Aquarist	Aquarist and Pondkeeper, 1928-39
4. Architects Journal	Architects and Builders Journal, 1910-19
5. Australian Mining	Mining and Chemical Engineering Review, 1960-65
6. Automotive Industries	Automotive and Aviation Industries, 1942-47
7. British Food Journal	British Food Journal and Hygienic Review, 1899-1965
8. British Journal of Dermatology	British Journal of Dermatology and Syphilis, 1917-50
9. British Journal of Diseases of the Chest	British Journal of Tuberculosis and Diseases of the Chest, 1944-58
10. British Journal of Pharmacology	British Journal of Pharmacology and Chemotherapy, 1946-68
11. British Plastics	British Plastics and Moulded Products Trader, 1929-44
12. Building Materials	Building Materials, Components, Floors, 1964
13. Canadian Chemical Processing	Canadian Chemistry and Process Industries, 1938-51
14. Chemical Engineering	Chemical and Metallurgical Engineering, 1919-46
15. Clinical Medicine	Clinical Medicine and Surgery, 1927-40
16. Electrical Review (London)	Telegraphic Journal and Electrical Review, 1873-91
17. Electrical World	Electrical World and Engineer, 1899-1905
18. Electronic Components	Radio and Electronic Components, 1959/60-63
19. Electronic Industries	Electronic Industries and Teletech, 1956-57
20. Engineering Times	Engineering Times and Foundry News, 1958-66
21. Fire Protection Review	Fire Protection and Accident Precaution Review, 1946-52
22. Food Processing	Food Processing/Marketing, 1965-68

Continued

23.	Fluid Power International	Fluid Power incorporating Compressed Air and Hydraulics, 1959-62
24.	Gas Journal	Journal of Gas Lighting Water Supply and Sanitary Improvement, 1849-1916
25.	Hydraulic Pneumatic Power	Hydraulic Pneumatic Power and Control, 1963-64
26.	Hydrocarbon Processing	Hydrocarbon Processing and Petroleum Refiner, 1961-66.
27.	Industrial Safety	Industrial Safety Equipment and Control, 1960-61
28.	Journal of Abnormal Psychology	Journal of Abnormal and Social Psychology, 1921-64
29.	Journal of Anatomy Journal of Cellular Physiology	Journal of Anatomy and Physiology, 1866-1915
30.	Journal of Comparative Neurology	Journal of Comparative Neurology and Psychology, 1904-10
31.	Journal of Immunology	Journal of Immunology, Virus Research and Experimental Chemotherapy, 1943-49
32.	Journal of Laryngology and Otology	Journal of Laryngology, Rhinology and Otology, 1892-1921 1921.
33.	Journal of Medicinal Chemistry	Journal of Medicinal and Pharmaceutical Chemistry 1959-62
34.	Journal of Morphology	Journal of Morphology and Physiology, 1924-31
35.	Journal of Oral Surgery	Journal of Oral Surgery, Anesthesia and Hospital Dental Service, 1959-64
36.	Journal of Pathology	Journal of Pathology and Bacteriology, 1892-1968
37.	Journal of Philosophy	Journal of Philosophy, Psychology and Scientific Methods, 1904-20
38.	Journal of Rehabilitation in Asia	Occupational Therapy and Rehabilitation in Asia, 1959/60
39.	Mass Production	Industrial Power and Mass Production, 1942-46
40.	Paint Industry Magazine	Drugs, Oil and Paints, 1893-1939
41.	Philippine Agriculturist	Philippine Agriculturist and Forester, 1911-19/20
42.	Safety Maintenance	Safety Maintenance and Production, 1950-56
43.	Solid State Technology	Semiconductor Products and Solid State Technology, 1962-67
44.	Steel Times	Steel and Coal, 1962-63
45.	Studies in Applied Mathematics	Journal of Mathematics and Physics, 1921-68
46.	Surveyor	Surveyor and Municipal Engineer, 1963-68
47.	Yearbook of Dermatology	Yearbook of Dermatology and Syphilology, 1933-58/59

In some cases the narrowing down of the scope is quite considerable and easily observed. For example the present title Gas Journal (item no. 24) has come from the lengthy, Journal of Gas Lighting Water Supply and Sanitary Improvement. The narrowing down of scope is considerable. However, it is interesting to note that this radical change occurred after the journal had continued under the earlier title for a long time, from 1849 to 1916. In fact the journal has changed title only once so far. A similar change is to be observed in the title Journal of Immunology which has changed from Journalof Immunology Virus Research and Experimental Chemotherapy.

The British Food Journal has only recently changed from British Food Journal and Hygienic Review. It is surprising that the journal continued for a long spell of 66 years before it was thought wise to delete the last two words and make it more elegant. So far as the scope of the journal is concerned, perhaps there is hardly any change. It may be recalled that we had mentioned a change from Clinical Orthopaedics to Clinical Orthopaedics and Related Research in the earlier section (Table 3). The present case shows the opposite trend and we believe this is more rational.

The title Industrial Safety has come from Industrial Safety Equipment and Clothing. This change occurred in 1962. It appears the journal had been changing its title quite frequently from its inception in 1955. The changes have been as follows:

V1-3(4), 1955-57 Uniforms and Industrial Clothing
V3(5)-5, 1957-59 Safety Equipment and Industrial Clothing
V6-7, 1960-61 Industrial Safety Equipment and Clothing

It is interesting to observe how the journal has been struggling to find the most suitable title. The above three titles mean substantially the same. Between the last two titles the difference is only in the positioning of the same words. The present title is short and less clumpsy and its greater stability is indicated by the fact that there has been no need to change it since 1962 in sharp contrast to three changes during the previous six years. According to our definition, this is narrowing down of scope but in reality the present title includes all the previous concepts like safety equipment, clothing, etc, and much more.

Another journal seems to have gone through a long excercise of adjustment of title to suit its scope. It is the Mass Production. The following is the chronology of its changes.

V1-14 (156), 1925-38 Fuel Economist
V14(157)-18(199), 1938-42 Industrial Power, Steam, Heat, Light and Air and the Fuel Economist
V18(200)-22, 1942-46 Industrial Power and Mass Production.

Here again the last title appears to have halted the tendency of frequent change as there is no change since 1947. However, there appears to be real change in the scope of the journal as the emphasis on fuel and power of the earlier titles has completely disappeared in the present title.

Again almost the same type of adjustment is observed in the journal Steel Times. The chronology of its change of titles is as follows:-

V1-181, 1866-1960 Iron and Coal Trades Review
V182-184 (4876), 1961 Iron and Coal
V184 (4877)-188 (4980), 1962-63 Steel and Coal

It would appear from the above listing that two concepts were very prominent earlier viz., iron and coal. Subsequently steel was introduced in the place of iron and in the last change coal has been deleted. Thus, coal, although prominent in all the three previous titles, is completely absent in the present one. This is a bit intriguing as the journal is the organ of the National Association of Colliery Managers (London).

A few more titles deserve some comments from various points of view. The journal Fire Protection Review (item no. 21) was known as Fire Protection and Air Raids Precautions during 1938-45 (first eight volumes). Surely the title was quite appropriate during that period which coincided with the period of the Second World War. After the War the expression 'air raids precautions', which was no longer appropriate, was replaced by the less specific and less fearful expression 'accident precaution'. In effect the operative change was from air raids to accident. Evidently, the publishers were looking for a substitute term for air raids precautions while thinking of a change. The changed title viz., Fire Protection and Accident Precaution Review survived for about six years only (1946-52) as it was soon realised that the substitute term was not doing any significant function. Hence the need for the next change ie, the present title which is short and elegent and at the same time expresses the scope of the journal quite well.

The next title (item no. 35) Journal of Oral Surgery has changed from rather a long title Journal of Oral Surgery, Anesthesia and Hospital Dental Service. By chopping off a substantial portion of this title there is hardly any loss so far as expressiveness of scope is concerned. The next title (item no. 36) also displays a similar change viz., from Journal of Pathology and Bacteriology to Journal of Pathology. Both of these examples hihglight a recent tendeny to shorten journal titles.

A tendency which has been observed to a certain extent in some of the above titles could be highlighted through the title Electronic Industries. It is observed that publishers often hestitate, for various reasons to change the title of a periodical radically. At least a few words from the old title are retained and a few new words added at a time. This type of change naturally, leads to a series of changes subsequently. In other words we find a number of journals changing their titles in stages. This is clearly seen through the chronology of title changes of Electronic Industries:

> V1-5, 1942-46 Electronic Industries including Industrial Electronics
> V6-12, 1947-53 Tele-Tech
> V13-15(8), 1954-56 Tele-Tech and Electronic Industries
> V15(9)-16, 1956-57 Electronic Industries and Teletech

Apart from a display of certain amount of indecision, the above chronology shows that the present title was actually contained in three of the previous titles. Only the second title was completely different. The result of the emphasis on the expression Tele-Tech in the second title was that the expression continued through the next two changed titles. The difference between the third and fourth titles is only in the matter of order of the same words. Hence, this change could have been avoided. Finally, the present title could have been obtained from the first title itself thus avoiding three subsequent title changes at short intervals.

Annotation:- In this section we have considered a set of 47 periodicals which have changed their titles by dropping out words from previous titles. As a consequence the titles have become shorter in all cases. The titles had an average length of 5.3 words before change. The average length decreased to 2.8 words after change. These figures, it may be pointed out compare well with the corresponding figures of the previous section where we considered the opposite tendency in title change i.e., broadening of scope by addition of new words. They are tabulated below:

Nature of change	No. of cases	Average no. of words before change	Average no. of words after change
Broadening of scope	48	2.7	4
Narrowing of scope	47	5.3	2.8

Narrowing down by Dropping out of other than Subject Terms from Titles or by other Change

First, we are considering just 4 cases where the changes indicate an indirect effect of narrowing down of scope by dropping out of non-subject terms. The titles are listed in Table 8.

Table 8 - Dropping out of Non-Subject Terms

Changed to	Changed from [last change with dates].
1. Biological Reviews	Biological Reviews and Biological Proceedings of the Cambridge Philosphical Society, 1926/27-35/36
2. Entomological News	Entomological News and Proceedings of the Entomological Section of the Academy of Natural Sciences of Philadelphia, 1890-1924.
3. Journal of Genetic Psychology	Pedagogical Seminary and Journal of Genetic Psychology 1891-1953.
4. Railway Gazette	Railway Gazette and Railway News, 1918-35

In the first two titles, it would be observed, change has meant the deletion of the names of sponsoring agencies also. In all the cases the new titles are considerably shorter and one interesting aspect is that the new titles are contained in the previous titles. The average length of words has come down from 9.5 to 2.5

71 Narrowing down by Change of Subject Terms

Five more journals were detected to have changed titles to indicate narrowing down of scope by changing subject terms, in contrast to deleting subject or non-subject terms as seen in the earlier cases. The journals are as follows:

Table 6 - Narrowing down of Scope by Changing Subject Terms

Changed to	Changed from [last change with dates]
1. Clinical Laboratory	Laboratory, 1928-62
2. Daily Aerological Record, Meterological Office, Great Britain.	Daily Weather Report, Meteorological Office, Great Britain- Upper Air Section, 1968-49
3. Diesel Equipment Superintendent	Equipment Superintendent, 1961
4. Journal of Applied Physics	Physics, 1931-36
5. Report of Biological Works, Faculty of Science, Osaka University.	Report of Scientific Works, Faculty of Science, Osaka University, 1953-64.

TRANSLATIONS AND TRANSLATION SERVICES

A R Chakraborty
Janardan Shriram
Meera G Joshi
Insdoc Trainees, 1974-75

The problems of scientific translation, from the point of view of English speaking scientist, have been highlighted. The organisation and working of some of the most important translation pools and clearing houses have been discussed and the usefulness of their indexing publications discussed and evaluated.

Introduction

The problem of the Babel came into reality in the field of communication of scientific and technical information in the 17th century, when Newton in England, Galileo in Italy and Descartes in France drifted away from the traditional scholarly custom of communicating in Latin and started communication in their respective vernacular languages. This signalled the end of the hegemony of Latin and the rise of various languages as medium for scientific communication . Prior to that period there was no appreciable language barrier as the number of scientists and naturally the number of documents produced by them were less in number. So there was less difficulty of knowing each other working in a common field and their works. Moreover. Latin was their common language of communication.

Fall of Latin is not the single instance of the fall of a language for scientific communication. Like the rise and fall of empires, one language or other has attained the coveted position of the most dominant medium of scientific communication and later had to yield to some other language. French and German have lost their once dominant role of early 20th century. German has suffered a steady decline from 34% of world chemical literature to 10% of present days. English has replaced both of them as a major medium of scientific communication. But it is difficult to say how long English will be able to maintain this leading position. In the field of Chemistry, Russian has registered a steady growth from 4% to 25% . Japanese now has a significant share of this world literature, viz., 5% while its previous share was only a fraction. Other Slavonic languages and Chinese are also trying to come up the language table. In fact Dr. Urquhart has predicted [1] that in the coming hundred years Chinese contributions in the field of science and technology will form one fourth of the world literature. C. W. Hanson's observation [2] that the number of significant contributions in the field of science and technology will be proportional to the population of that country, echoes Dr. Urquhart's opinion. It is expected that with the economic and educational development of the lesser developed parts of the world share of languages in scientific communication will also be changed. Many of the countries will be using languages other than English for communicating research results.

The impact of so many languages is also felt in the indexing and abstracting services covering the world literature. Now a days they are obliged to cover documents published in about 50 languages [3]. An analysis of the documents in various indexing and abstracting services gives an indication of the language composition in various fields. D. N. Wood [4] surveyed six different secondary periodicals in English like the Chemical Abstracts, Physics Abstracts, Engineering Index, Biological Abstracts. Index Medicus and Mathematical Review to find the split of documents in various languages . A similar study was made in the field of geology by Geosystem, London [5] on their publication Geotitles Weekly. Results of these studies indicate a dominant position of English.

Language Distribution of International Bibliographical Services

All these have revealed that at least 50% of the total literature covered are in English. The higher percentage of English for some subjects may be due to the bias of the English secondary periodicals to cover documents of the language of their respective services. In fact Hawkes [5] also studied language distribution of geological documents on the basis of the coverage of the Russian abstracting service-Referativny Zhurnal Geologya section. The data thus obtained can be compared with the data obtained from Geotitles. The comparison, as given below, already shows a bias in the two services in respect of the language of publication.

Language	Geotitles % of documents covered	Referativny Zhurnal % of documents covered
English	73	27
Russian	15	30
French	3	11
German	4	11
Other European	1	11
Non-Russian Slavonic	3	9
Non European	1	1

Comparative Language Coverage in Geotitles and Referativny Zhurnal

Making allowance for this bias it may be safely assumed from the data that about 50 p.c. of the scientific literature of the world are in English. Russian is a close second followed by others. So 50 p.c. of the world's scientific literature remain outside the reach of scientists knowing only English. According to one estimate [4] the number of such articles is nearly 800,000. These huge number of non-English scientific documents cannot be and should not be ignored for their quality also. Importance of qualitative value of the non-English scientific documents is the reason behind the steadily increasing demand of translation of Russian documents since the sending up of the first Sputnik by the Russian [3].

How to Cross the Language Barrier

The language barrier may be crossed by the scientists themselves by learning more and more languages. Successful implementation of this process depends much on the educational policy of the countries like Russia, where learning a foreign language is a part of the curriculum from school level. But the attempt of a mature scientist to learn more languages may dissipate his time and energy and may prevent him to become an active research worker.

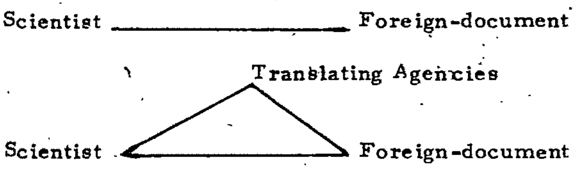
Abstracting services can also play a part to help cross the language barrier to some extent. Most of the international abstracting services in the field of science and technology cover documents from various languages and thus useful in this respect. Informative abstract can be more useful than the indicative one for this.

Express information (Ekspress Informatsiya) Service of VINITI is even better than the general abstracting services [6]. They are published in various sections covering narrow areas of applied science. They contain translation of two to fifteen pages from non-Russian periodicals. Formula, chart, table of original article are retained. Instead of enormous investment of money, expertise, and time involved in cover-to-cover translations, efforts are actually concentrated on documents which are likely to be of interest to a larger number of persons immediately.

Translation of the whole document is the ultimate means to avoid language difficulties.

Triangle of Translation

Ranganathan [7] compared the present situation of translation with a triangle. Previously there was a linear relation between the scientists and the foreign-language documents. They used to



translate for themselves. Now translation and translating agencies have taken up an intermediary and vital position controlling effective communication between the scientist and foreign documents and thus they need special attention for study.

Types of Translations

Translations may be divided into 'responsive' and 'anticipatory' categories. Responsive translations are done on specific demand and some of them may not get any place in the tools for locating translation. Bibliographical control of anticipatory translations, which are made for anticipated demand, are much more effective. Cover to cover translation of primary and secondary periodicals belong to this category. Majority of the cover to cover translated periodicals are from Russian into English. Another variety of anticipatory translated periodicals covers selected papers from different periodicals.

Purpose of the Paper

A scientist facing language problem will naturally have in his mind one or more of the following questions.

i) whether a translated version of the document is already available?

ii) whether it is being translated by some agencies?

iii) what are the sources from which information about translated version of the document will be available?

iv) how to get a copy of the translated version?

v) whether any payment is involved and how to pay in that case?

vi) what journals are available in cover to cover translated form?

vii) In case of non availability of a translated version, who can translate from a specific language to the language of the scientist? This presupposes some subject knowledge also.

The tools to answer all these questions will vary with the language of the enquirer. An attempt has been made in this paper to answer most of these questions from the point of view of an English scientist by way of discussing the translation tools and the functions of the respective agencies publishing these tools.

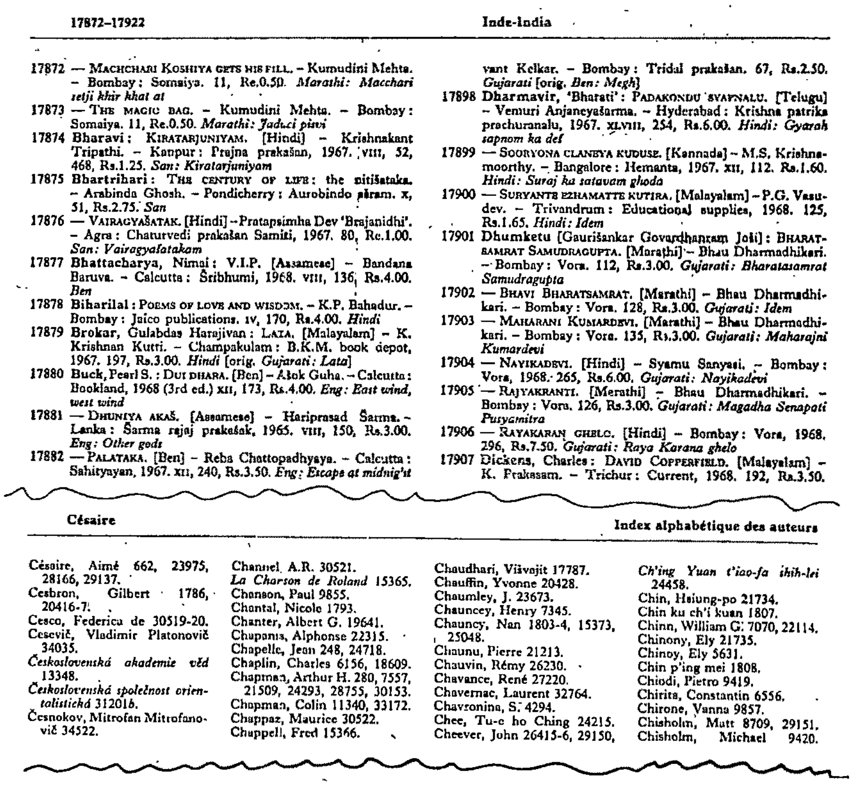
Necessity of Tools and Pools of Translation

Translation of scientific documents is a costly and time consuming affair. It has been estimated that a translated version of a document may cost some times as high as hundred times the price of the original. So it is in the interest of the scientific community that available translations should get sufficient publicity to avoid further loss of money and manpower for fresh translation. More use of available translations with some charges will also distribute the high cost of translations.

Translation Tools and Agencies

1. Unesco and the Index Translationum

Index Translationum is an annual publication from Unesco since its inception containing list of translated books in all subjects from various countries of the world. It is a continuation of the earlier title Repertoire International des Traductions by the earstwhile International Institute of Intellectural Cooperation since 1932. Items in the list are arranged under the order of the French names of the countries subdivided by the ten main divisions of U.D.C. Data for this publication are supplied by respective national agency of each country, responsible for this job. I.S.O. system of transliteration is adopted for Cyrillic scripts. Transliteration of some other scripts is not however uniform, as the data are supplied by various national agencies following different pattern. Author index is provided at the end of the publication, which refers to the serial numbers of the entries in the main list.



17872–17922

Inde-India

17872 — MACHCHARI KOSHIYA GETS HIS FILL. – Kumudini Mehta. – Bombay: Somaiya. 11, Re.0.50. *Marathi: Macchari setji khir khat at*
17873 — THE MAGIC BAG. – Kumudini Mehta. – Bombay: Somaiya. 11, Re.0.50. *Marathi: Jaduci pisvi*
17874 Bharavi: KIRATARJUNIYAM. [Hindi] – Krishnakant Tripathi. – Kanpur: Prajna prakašan, 1967. VIII, 52, 468, Rs.1.25. *San: Kiratarjuniyam*
17875 Bhartrihari: THE CENTURY OF LIFE: the nitišataka. – Arabinda Ghosh. – Pondicherry: Aurobindo ašram. x, 51, Rs.2.75. *San*
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17877 Bhattacharya, Nimai: V.I.P. [Assamese] – Bandana Baruva. – Calcutta: Šribhumi, 1968. VIII, 136, Rs.4.00. *Ben*
17878 Biharilal: POEMS OF LOVE AND WISDOM. – K.P. Bahadur. – Bombay: Jaico publications. IV, 170, Rs.4.00. *Hindi*
17879 Brokar, Gulabdas Harajivan: LATA. [Malayalam] – K. Krishnan Kutti. – Champakulam: B.K.M. book depot, 1967. 197, Rs.3.00. *Hindi* [orig. *Gujarati: Lata*]
17880 Buck, Pearl S.: DUI DHARA. [Ben] – Ašok Guha. – Calcutta: Bookland, 1968 (3rd ed.) XII, 173, Rs.4.00. *Eng: East wind, west wind*
17881 — DHUNIYA AKAŠ. [Assamese] – Hariprasad Šarma. – Lanka: Šarma rajaj prakašak, 1965. VIII, 150, Rs.3.00. *Eng: Other gods*
17882 — PALATAKA. [Ben] – Reba Chattopadhyaya. – Calcutta: Sahityayan, 1967. XII, 240, Rs.3.50. *Eng: Escape at midnight*

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17898 Dharmavir, 'Bharati': PADAKONDU SVAPNALU. [Telugu] – Vemuri Anjaneyašarma. – Hyderabad: Krishna patrika prachuranalu, 1967. XLVIII, 254, Rs.6.00. *Hindi: Gyarah sapnom ka deš*
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17900 — SURYANTE EZHAMATTE KUTIRA. [Malayalam] – P.G. Vasudev. – Trivandrum: Educational supplies, 1968. 125, Rs.1.65. *Hindi: Idem*
17901 Dhumketu [Gauršankar Govardhanram Joši]: BHARATSAMRAT SAMUDRAGUPTA. [Marathi] – Bhau Dharmadhikari. – Bombay: Vora. 112, Rs.3.00. *Gujarati: Bharatasamrat Samudragupta*
17902 — BHAVI BHARATSAMRAT. [Marathi] – Bhau Dharmadhikari. – Bombay: Vora. 128, Rs.3.00. *Gujarati: Idem*
17903 — MAHARANI KUMARDEVI. [Marathi] – Bhau Dharmadhikari. – Bombay: Vora. 135, Rs.3.00. *Gujarati: Maharajni Kumardevi*
17904 — NAYIKADEVI. [Hindi] – Syamu Sanyasi. – Bombay: Vora, 1968. 265, Rs.6.00. *Gujarati: Nayikadevi*
17905 — RAJYAKRANTI. [Marathi] – Bhau Dharmadhikari. – Bombay: Vora. 126, Rs.3.00. *Gujarati: Magadha Senapati Pusyamitra*
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17907 Dickens, Charles: DAVID COPPERFIELD. [Malayalam] – K. Prakasam. – Trichur: Current, 1968. 192, Rs.3.50.

Césaire

Index alphabétique des auteurs

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Chin p'ing mei 1808.
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Chisholm, Michael 9420.

Exhibit 1 - Portions of a page and the author index from Index Translationum

2. ETC and the World Index

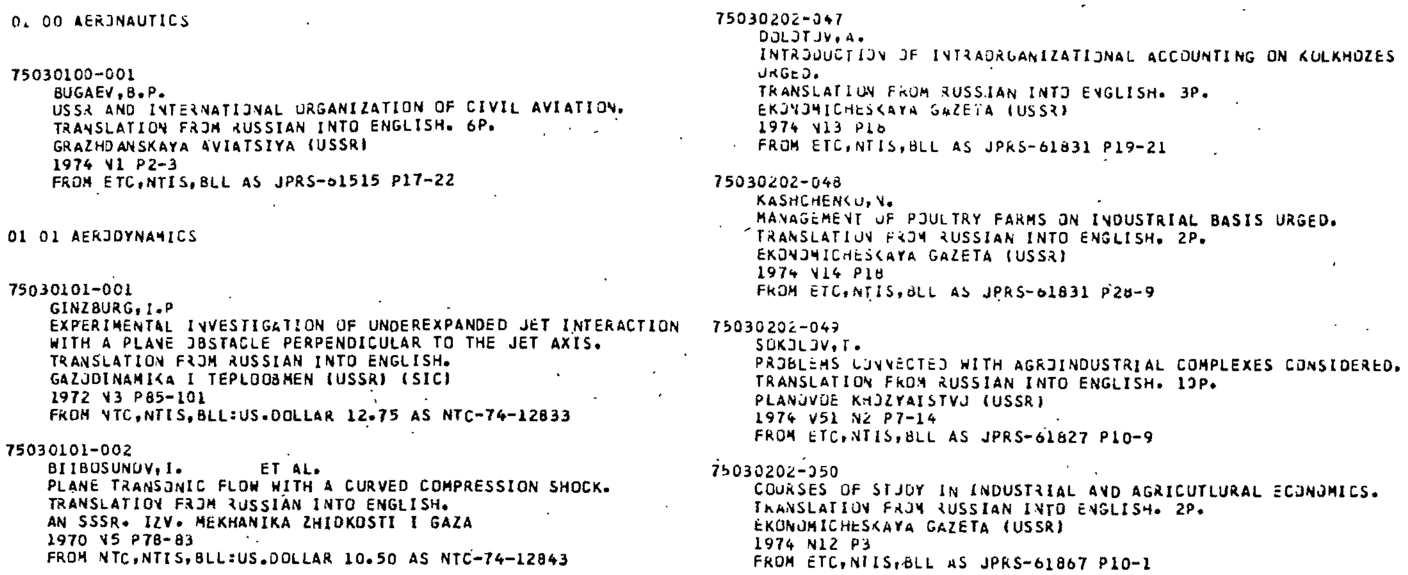
European Translations Centre (ETC), a fine example of international cooperation in the field of translation of scientific and technical documents, is located at the Technological University of Delft, Delft, Netherlands. ETC was started in 1960 by the Western European Countries but the project was stimulated and blessed by USA and OECD (Organisation for Economic Cooperation and Development). Although the name ETC is restricted to Europe but infact it is an international project. Membership of ETC has crossed the Atlantic and the Mediterranean by including Canada and Israel as full members. Countries beyond the Indian and Pacific Oceans like Japan, Australia and India are cooperating with ETC. ETC is directed by a Board of Management appointed by the participating countries. ETC acts as a clearing house for scientific and technical translation prepared throughout the world from languages of Eastern Europe, Middle East, and Far East into western languages mainly English, German and French.

ETC does not prepare translations but functions as a pool and performs only those functions which national member countries find it difficult to do on international level. It keeps a reference catalogue and runs on information bureau which handle enquiries. ETC is also carrying its share of responsibility by announcing and indexing translations available in various sources in the monthly periodical World Index of Scientific Translation and List of Translations notified to ETC.

World Index of Scientific Translations and List of Translation notified to ETC. were previously two separate periodicals with separate frequencies, quarterly and fortnightly respectively. From 1971 the two titles were merged into a single periodical with a new monthly frequency . From 1972 interrelation of the entries of 'Index' and 'List' parts started with the help of common reference numbers.

List section of the periodical functions as a supplement to the translation lists of various member countries of ETC, by announcing only these translations that have escaped attention of the national lists. Coverage of the Index part is greater than the List part. It includes all the items covered by ETC and national lists.

Translated documents on Science, Technology and Social Science are taken care of by the ETC periodical. Complete translation of documents, translation in process, cover-to-cover translated periodicals, translation of abstracts, translated periodicals covering only selected articles from various periodicals are taken care of by this periodical.



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01 00 AERONAUTICS

75030100-001
     BUGAEV,B.P.
     USSR AND INTERNATIONAL ORGANIZATION OF CIVIL AVIATION.
     TRANSLATION FROM RUSSIAN INTO ENGLISH. 6P.
     GRAZHDANSKAYA AVIATSIYA (USSR)
     1974 V1 P2-3
     FROM ETC,NTIS,BLL AS JPRS-61515 P17-22

01 01 AERODYNAMICS

75030101-001
     GINZBURG,I.P
     EXPERIMENTAL INVESTIGATION OF UNDEREXPANDED JET INTERACTION
     WITH A PLANE OBSTACLE PERPENDICULAR TO THE JET AXIS.
     TRANSLATION FROM RUSSIAN INTO ENGLISH.
     GAZODINAMIKA I TEPLOOBMEN (USSR) (SIC)
     1972 V3 P85-101
     FROM NTC,NTIS,BLL:US.DOLLAR 12.75 AS NTC-74-12833

75030101-002
     BIIBOSUNOV,I.        ET AL.
     PLANE TRANSONIC FLOW WITH A CURVED COMPRESSION SHOCK.
     TRANSLATION FROM RUSSIAN INTO ENGLISH.
     AN SSSR. IZV. MEKHANIKA ZHIDKOSTI I GAZA
     1970 V5 P78-83
     FROM NTC,NTIS,BLL:US.DOLLAR 10.50 AS NTC-74-12843

75030202-047
     DOLOTOV,A.
     INTRODUCTION OF INTRAORGANIZATIONAL ACCOUNTING ON KOLKHOZES
     URGED.
     TRANSLATION FROM RUSSIAN INTO ENGLISH. 3P.
     EKONOMICHESKAYA GAZETA (USSR)
     1974 V13 P16
     FROM ETC,NTIS,BLL AS JPRS-61831 P19-21

75030202-048
     KASHCHENKO,N.
     MANAGEMENT OF POULTRY FARMS ON INDUSTRIAL BASIS URGED.
     TRANSLATION FROM RUSSIAN INTO ENGLISH. 2P.
     EKONOMICHESKAYA GAZETA (USSR)
     1974 V14 P18
     FROM ETC,NTIS,BLL AS JPRS-61831 P28-9

75030202-049
     SOKOLOV,T.
     PROBLEMS CONNECTED WITH AGROINDUSTRIAL COMPLEXES CONSIDERED.
     TRANSLATION FROM RUSSIAN INTO ENGLISH. 10P.
     PLANOVOE KHOZYAISTVO (USSR)
     1974 V51 N2 P7-14
     FROM ETC,NTIS,BLL AS JPRS-61827 P10-9

75030202-050
     COURSES OF STUDY IN INDUSTRIAL AND AGRICUTLURAL ECONOMICS.
     TRANSLATION FROM RUSSIAN INTO ENGLISH. 2P.
     EKONOMICHESKAYA GAZETA (USSR)
     1974 N12 P3
     FROM ETC,NTIS,BLL AS JPRS-61867 P10-1
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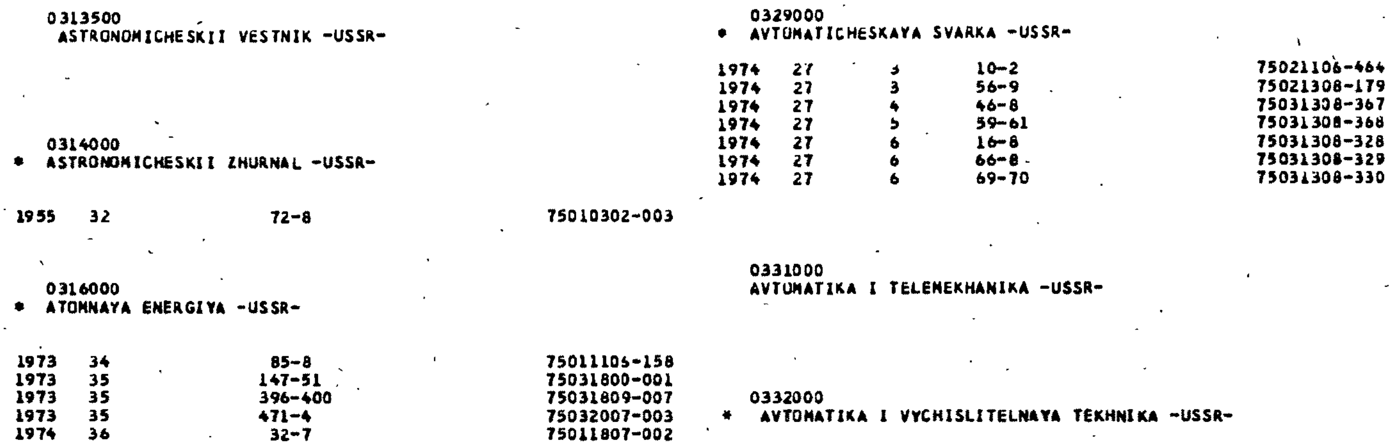
Exhibit 2 - Portion of a page from the World List (List part)



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  0313500
   ASTRONOMICHESKII VESTNIK -USSR-



  0314000
*  ASTRONOMICHESKII ZHURNAL -USSR-

1955   32              72-8                   75010302-003


  0316000
*  ATOMNAYA ENERGIYA -USSR-

1973   34              85-8                   75011106-158
1973   35             147-51                  75031800-001
1973   35             396-400                 75031809-007
1973   35             471-4                   75032007-003
1974   36              32-7                   75011807-002
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    0329000
*   AVTOMATICHESKAYA SVARKA -USSR-

1974   27      3      10-2                    75021106-464
1974   27      3      56-9                    75021308-179
1974   27      4      46-8                    75031308-367
1974   27      5      59-61                   75031308-368
1974   27      6      16-8                    75031308-328
1974   27      6      66-8                    75031308-329
1974   27      6      69-70                   75031308-330


    0331000
    AVTOMATIKA I TELEMEKHANIKA -USSR-



    0332000
*    AVTOMATIKA I VYCHISLITELNAYA TEKHNIKA -USSR-
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Exhibit 3 - Portion of a page from the World List (Index part)

Entries in the List part are arranged under specific subgroups within the COSATI subject categories. Each item contains acronym of the agency from where the translation may be obtained. Reference number with each entry and a complete list and address of sources (corresponding to the anonym of source in each entry) are helpfull in ordering a translation.

Arrangement of entries in the Index part is alphabetical according to the title of the original periodicals, followed by year, volume, number and inclusive pagination of the articles translated. An asterisk (*) before an entry indicates that the periodical is regularly translated either cover to cover or selectively or that abstracted translation in these two categories are done.

Periodicals in scripts other than Roman are arranged under transliterated title using B.S.I. system for Russian, Wade Giles system for Chinese and Hepburn system for Japanese. Periodicals which are known in different titles in English and in the original are listed under original title. References link English title to the original one. References are also provided for periodical which changed titles, from one title to another.

3. NTC and the TR-I of USA

After the Second World War the Office of Technical Services (OTS) was created. One of its function was to coordinate procurement, production and dissemination of translations of documents pertaining to technological development of German and Japanese industries. Later in 1953 Scientific Translation Centre at the Library of Congress started collecting translations of Russian documents. Simultaneously Special Libraries Association Translation Centre (SLATC) at John Crerar Library, Chicago took the responsibility of collection of translations from other languages. SLATC was a voluntary project of the Science and Technology Division of SLA. SLATC changed to the new name of National Translation Center (NTC) in 1953. It is a co-operative non-profit enterprise, primarily responsible for collection of non-governmental translations from USA and elsewhere. National Technical Information Service (NTIS) in USA is responsible for collection of translations from various governmental agencies of USA and other countries. NTIS publishes semi-monthly Government Reports Announcement (GRA) (Previously US Government Research and Development Reports) incorporating translations together with other reports. Government Reports Index (GRI) supplements GRA by providing index for respective volume.

NTC, which acts as the biggest pool and national clearinghouse of information on translations, aims to eliminate costly duplication of translation, effort and to free funds for translation of new documents. Holdings of NTC as well as translations available from other sources are recorded in the following suceessive publications.

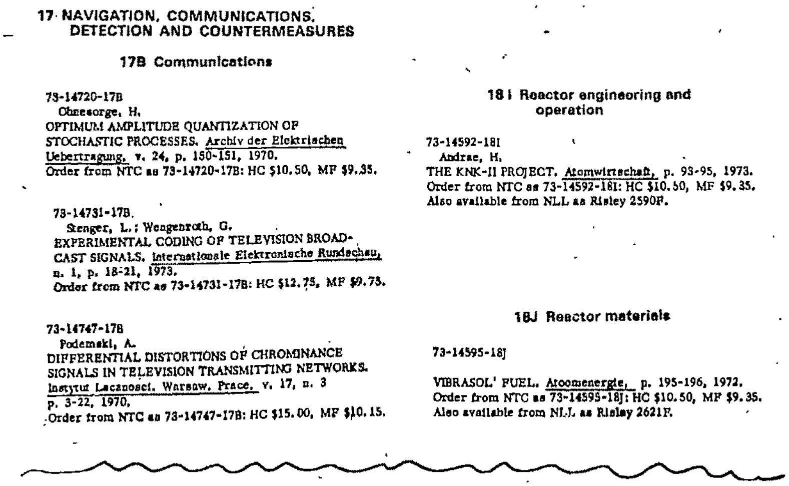
1. Author list of translations, 1953.

2. Bibliography of translations of Russian scientific and technical literature, 1953-56

3. Translation monthly, 1955-58.
4. Technical translations, 1959-67.
5. Translations Register-Index (TR-I), 1967—
6. Consolidated index of translations into English (CITE), 1969.

Technical Translations, a semimonthly publication from the Clearinghouse for Federal Scientific and Technical Information (CFSTI) the former name of the National Technical Information Science, (NTIS) was the most comprehensive index of scientific translations in USA till 1967. Some new features like translations in process, list of cover-to-cover translated periodicals, translated table of contents of selected periodicals were initiated by this ceased periodical.

Translations Register-Index (TR-1), a semi-monthly periodical from NTC superseded Technical Translations in 1967. The Register section of the periodical announces new accession to NTC arranged in COSATI classification order. The index section covers items in the Register section and also items listed in GRA, GRI and some other sources. Index section which is divided into Journal citation and patent citation index, is cumulated half yearly. Reports, standards and other serial publications are included in the journal section listed alphabetically by the title. Patents are arranged alphabetically by countries. Cover to cover translated periodicals are not indicated in TR-I.



17 NAVIGATION, COMMUNICATIONS, DETECTION AND COUNTERMEASURES

17B Communications

73-14720-17B
Ohnesorge, H.
OPTIMUM AMPLITUDE QUANTIZATION OF STOCHASTIC PROCESSES. Archiv der Elektrischen Uebertragung, v. 24, p. 150-151, 1970.
Order from NTC as 73-14720-17B: HC $10.50, MF $9.35.

73-14731-17B.
Stenger, L.; Wengenroth, G.
EXPERIMENTAL CODING OF TELEVISION BROADCAST SIGNALS. Internationale Elektronische Rundschau, n. 1, p. 18-21, 1973.
Order from NTC as 73-14731-17B: HC $12.75, MF $9.75.

73-14747-17B
Podemski, A.
DIFFERENTIAL DISTORTIONS OF CHROMINANCE SIGNALS IN TELEVISION TRANSMITTING NETWORKS. Instytut Lacznosci, Warsaw, Prace, v. 17, n. 3 p. 3-22, 1970.
Order from NTC as 73-14747-17B: HC $15.00, MF $10.15.

18I Reactor engineering and operation

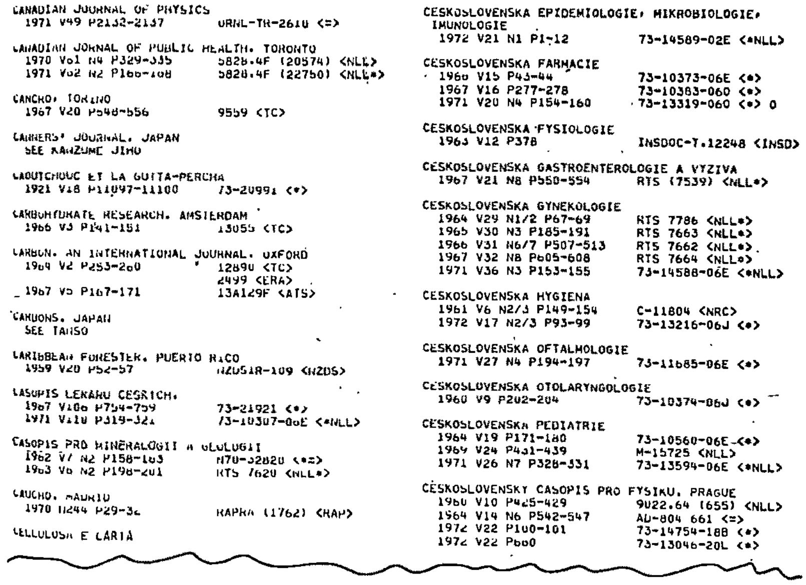
73-14592-18I
Andrae, H.
THE KNK-II PROJECT. Atomwirtschaft, p. 93-95, 1973.
Order from NTC as 73-14592-18I: HC $10.50, MF $9.35.
Also available from NLL as Risley 2590F.

18J Reactor materials

73-14595-18J

VIBRASOL' FUEL. Atoomenergie, p. 195-196, 1972.
Order from NTC as 73-14595-18J: HC $10.50, MF $9.35.
Also available from NLL as Risley 2621F.

Exhibit 4 - Portion of a page from the Register section of the TR-I



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CANADIAN JOURNAL OF PHYSICS
  1971 V49 P2132-2137         ORNL-TR-2610 <=>

CANADIAN JORNAL OF PUBLIC HEALTH. TORONTO
  1970 V61 N4 P329-335        5828.4F (20574) <NLL>
  1971 V62 N2 P166-168        5828.4F (22750) <NLL*>

CANCRO. TORINO
  1967 V20 P548-556           9559 <TC>

CANNERS' JOURNAL. JAPAN
  SEE KANZUME JIHO

CAOUTCHOUC ET LA GUTTA-PERCHA
  1921 V18 P11097-11100       73-20991 <*>

CARBOHYDRATE RESEARCH. AMSTERDAM
  1966 V3 P141-151            13055 <TC>

CARBON. AN INTERNATIONAL JOURNAL. OXFORD
  1964 V2 P253-260            12890 <TC>
                              2499 <ERA>
  1967 V5 P167-171            13A129F <ATS>

CARBONS. JAPAN
  SEE TANSO

CARIBBEAN FORESTER. PUERTO RICO
  1959 V20 P52-57             NZDSIR-109 <NZDS>

CASOPIS LEKARU CESKICH.
  1967 V106 P754-759          73-21921 <*>
  1971 V110 P319-321          73-10307-06E <*NLL>

CASOPIS PRO MINERALOGII A GEOLOGII
  1962 V7 N2 P158-163         N70-32820 <*=>
  1963 V8 N2 P198-201         RTS 7620 <NLL*>

CAUCHO. MADRID
  1970 N244 P29-32            RAPRA (1762) <RAP>

CELLULOSA E CARTA

CESKOSLOVENSKA EPIDEMIOLOGIE, MIKROBIOLOGIE,
 IMUNOLOGIE
  1972 V21 N1 P1-12           73-14589-02E <*NLL>

CESKOSLOVENSKA FARMACIE
  1966 V15 P43-44             73-10373-06E <*>
  1967 V16 P277-278           73-10383-060 <*>
  1971 V20 N4 P154-160        73-13319-060 <*> 0

CESKOSLOVENSKA FYSIOLOGIE
  1963 V12 P378               INSDOC-T.12248 <INSD>

CESKOSLOVENSKA GASTROENTEROLOGIE A VYZIVA
  1967 V21 N8 P550-554        RTS (7539) <NLL*>

CESKOSLOVENSKA GYNEKOLOGIE
  1964 V29 N1/2 P67-69        RTS 7786 <NLL*>
  1965 V30 N3 P185-191        RTS 7663 <NLL*>
  1966 V31 N6/7 P507-513      RTS 7662 <NLL*>
  1967 V32 N8 P605-608        RTS 7664 <NLL*>
  1971 V36 N3 P153-155        73-14588-06E <*NLL>

CESKOSLOVENSKA HYGIENA
  1961 V6 N2/3 P149-154       C-11804 <NRC>
  1972 V17 N2/3 P93-99        73-13216-06J <*>

CESKOSLOVENSKA OFTALMOLOGIE
  1971 V27 N4 P194-197        73-11685-06E <*>

CESKOSLOVENSKA OTOLARYNGOLOGIE
  1960 V9 P202-204            73-10374-06J <*>

CESKOSLOVENSKA PEDIATRIE
  1964 V19 P171-180           73-10560-06E <*>
  1969 V24 P431-439           M-15725 <NLL>
  1971 V26 N7 P328-331        73-13594-06E <*NLL>

CESKOSLOVENSKY CASOPIS PRO FYSIKU. PRAGUE
  1960 V10 P425-429           9022.64 (655) <NLL>
  1964 V14 N6 P542-547        AD-804 661 <=>
  1972 V22 P100-101           73-14754-18B <*>
  1972 V22 P660               73-13046-20L <*>
```

Exhibit 5 - Portion of a page from the Journal Citation index of the TR-I

CITE was published by NTC in 1969 to provide information about all the previous translations into English in a single list. CITE covers 142000 translations. It is divided into two parts serial citation index and Patent citation index. The arrangement of the items are similar to TR-I.

4. BLL and Aslib of UK

Translation activities in UK hinges round two important agencies, British Lending Library (BLL), (previously known as the National Lending Library, NLL) at Boston Spa and Aslib. BLL is the largest depository of translations in U.K. British Government departments, firms, institutions research associations, universities and others contribute translations to BLL. Previously BLL (then NLL) received all translations from "difficult languages" (Russian, East European, oriental) available in the U.S. pool. In exchange BLL supplied copies of most of the translations received by them. Besides collecting translations, BLL has shown keen interest in promotion of translation activities including cover-to-cover translation of Russian periodicals. The title of the announcement tool of BLL has gone under several changes, with the change of the name of the sponsor. LLU Translations Bulletin (1959-1960) was superseded by NLL Translations Bulletin (1961-1970). They covered translated texts of selected Russian articles, list of translated books (monthly Russian), information regarding cover-to-cover translated periodicals and recent additions to the pool. The task of these periodicals were bifurcated in 1971 and was taken over by two different titles NLL Announcement Bulletin (presently BLL Announcement Bulletin) and NLL Review (presently BLL Review).

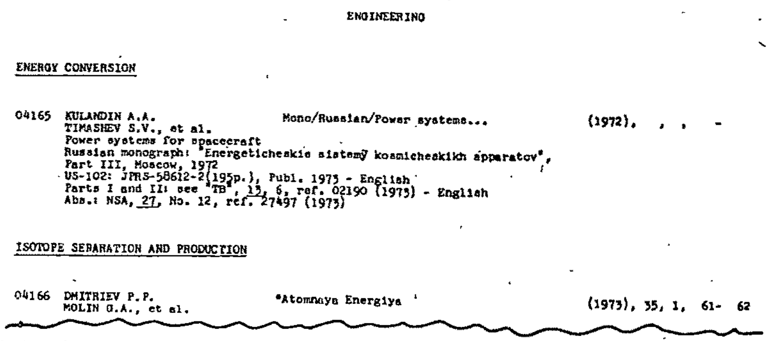
The first title carries lists of translations along with reports and theses produced by or submitted to various British agencies. NLL Review, (presently BLL Review), a quarterly publication, took up the burden of covering cover-to-cover translation, BLL book translation etc. Selected translations of a specific subject is one of the added characteristics of this new title.

Aslib is the second organisation in U K that handles enquiries about translations. In 1951 Commonwealth Index of Unpublished Translations was created to coordinate translation work and information about translation within the Commonwealth countries. According to this programme records of all the translation done in the participating countries are transfered on cards. Aslib maintains the British copy of this catalogue. The CSIRO in Australia, NRC in Canada, and INSDOC in India receive and maintain the respective national copy of the Commonwealth Index. Aslib and BLL cooperate with each other in locating translations. Aslib also maintains a register of approved translatators for the benefit of the enquirers.

5. Transatom and its Bulletin

The common interest of the Western countries in the field of nuclear science has initiated the growth of Transatom and Transatom Bulletin. The European Atomic Energy Community (EURATOM), U S Atomic Energy Commission (USAEC), and U.K. Atomic Energy Authority (UKAEA) have agreed to pool their efforts in collection and dissemination of information on translations of nuclear documents produced in Eastern European, Oriental other 'infamiliar' languages and thus formed Transatom at Euratom headquarters at Brussels. Transatom is presently located at Luxemberg. With a view to disseminate relevant information in large scale a monthly announcement journal Transatom Bulletin is being published from Transatom since 1961. The bulletin covers translations both completed and in preparation and also list of cover-to-cover translated periodicals. Following an agreement reached between the participants of Transatom, the journal is published only in English.

Section I of this bulletin incorporates translations completed. However translations listed in this section are not supplied by Transatom but they are available with the indivudual organisations, whose alpha-numeric code is indicated under the respective reference and whose complete address is listed in the beginning as symbols of organisations. Titles are indicated in English and also in language of translation, if the translation is not in English.



Transatom Bulletin 1973, Vol. 13, No. 11 - Section I

ENGINEERING

ENERGY CONVERSION

04165 KULANDIN A.A. Mono/Russian/Power systems... (1972), , , -
TIMASHEV S.V., et al.
Power systems for spacecraft
Russian monograph: "Energeticheskie sistemy kosmicheskikh apparatov",
Part III, Moscow, 1972
US-102: JPRS-58612-2(195p.), Publ. 1973 - English
Parts I and II: see "TB", 13, 6, ref. 02190 (1973) - English
Abs.: NSA, 27, No. 12, ref. 27497 (1973)

ISOTOPE SEPARATION AND PRODUCTION

04166 DMITRIEV P.P. "Atomnaya Energiya" (1973), 35, 1, 61- 62
MOLIN G.A., et al.

Exhibit 6 - Portion of a page from Section I of the Transatom Bulletin

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                              ORIGINAL SOURCE INDEX
                                                                  Reference

                                    R

*RADIOBIOLOGIYA                          1973, 13, 5, 651- 661 E   TP02190
*RADIOBIOLOGIYA                          1973, 13, 5, 662- 668 E   TP02212
*RADIOBIOLOGIYA                          1973, 13, 5, 674- 679 E   TP02392
*RADIOBIOLOGIYA                          1973, 13, 5, 680- 685 E   TP02187
*RADIOBIOLOGIYA                          1973, 13, 5, 691- 694 E   TP02209
*RADIOBIOLOGIYA                          1973, 13, 5, 695- 699 E   TP02192
*RADIOBIOLOGIYA                          1973, 13, 5, 700- 703 E   TP02191
*RADIOBIOLOGIYA                          1973, 13, 5, 704- 708 E   TP02219
*RADIOBIOLOGIYA                          1973, 13, 5, 709- 712 E   TP02213
*RADIOBIOLOGIYA                          1973, 13, 5, 713- 718 E   TP02223
*RADIOBIOLOGIYA                          1973, 13, 5, 719- 722 E   TP02222
*RADIOBIOLOGIYA                          1973, 13, 5, 723- 728 E   TP02224
*RADIOBIOLOGIYA                          1973, 13, 5, 729- 733 E   TP02211
*RADIOBIOLOGIYA                          1973, 13, 5, 734- 737 E   TP02215
*RADIOBIOLOGIYA                          1973, 13, 5, 738- 740 E   TP02184
*RADIOBIOLOGIYA                          1973, 13, 5, 741- 743 E   TP02199
*RADIOBIOLOGIYA                          1973, 13, 5, 750- 753 E   TP02221
*RADIOBIOLOGIYA                          1973, 13, 5, 754- 757 E   TP02225
*RADIOBIOLOGIYA                          1973, 13, 5, 758- 759 E   TP02216
*RADIOBIOLOGIYA                          1973, 13, 5, 761- 764 E   TP02185
*RADIOBIOLOGIYA                          1973, 13, 5, 765- 768 E   TP02195
*RADIOBIOLOGIYA                          1973, 13, 5, 769- 770 E   TP02189
*RADIOBIOLOGIYA                          1973, 13, 5, 771- 773 E   TP02217
*RADIOBIOLOGIYA                          1973, 13, 5, 782- 785 E   TP02210
*RADIOBIOLOGIYA                          1973, 13, 5, 786- 788 E   TP02186
*RADIOBIOLOGIYA                          1973, 13, 5, 792- 795 E   TP02208
*RADIOBIOLOGIYA                          1973, 13, 5, 796- 799 E   TP02193
*RADIOBIOLOGIYA                          1973, 13, 5, 800- 802 E   TP02226
 RADIOISOTOPES                           1971, 20, 7, 310- 316 E   TP02127
 REPORT/JAPANESE/JAERI-MEMO-4249         1973,   ,  ,    -     E     04220
 REPORT/RUSSIAN/CHRONIC IRRADIATION...   1972,   ,  ,    -     E   TP02220
 REPORT/RUSSIAN/JINR-P02-5336            19...,  ,  ,    -     E   TP02265
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Exhibit 7 - Portion of a page of the Original Source Index of Transatom Bulletin

Section II. Lists titles of Eastern documents which have entered the translation programme of various organisations. Once these translations are completed, these will be announced, "available" in section I again.

Since 1966 (vol. 6), Transatom Bulletin has been publishing in a supplementary section III, a monthly list of references relating to the most promising titles selected among the documents acquired by Eastatom, organisation jointly created by Euratom and Kernoforschungsanlage Julich. The documents listed in this section are Eastern nuclear documents which have neither been mentioned nor have been translated by western sources. This section tries to draw the attention of western sources to eastern documents fit for translation.

Each issue of the Bulletin incorporates author and original source index. Index is cumulated quarterly with the issue numbers 3, 6 and 9. Annual index is published separately in the beginning of the following year. Index is also cumulated five yearly.

6. Occassional Tools

Besides regular publications from various translating agencies, some occasional publications in this field are also useful. They provide answer to the questions - who can translate and what are the journals available in cover to cover translated form. Directory of technical and scientific translators, and services by Patricia Millard, Translators and translations - services and sources in science and technology by F.E. Kaiser, Roster of translators compiled and published by INSDOC belong to this category. Information about cover to cover translated periodicals are available in some of the tools mentioned earlier. Guide to scientific and technical journals in translation by C.J. Himmelsbach and G.E. Boyd is an additional tool to answer the second question.

Comments

1. Utopian idea of common lingua franca for the scientists throughout the world may be dropped for ever.
2. Hard realities of language barrier must be accepted by all concerned and large-scale translation seems to be the only solution for this problem.
3. There is enough scope for international cooperation in the field of translations among the various countries and among the scientists of each subject groups.
4. It may be predicted from the data provided in Appendix II that some of these foreign language periodicals are going to be translated cover to cover in the near future or they need such treatment.

Acknowledgement

We are grateful to Shri B. Guha, INSDOC for selecting for us the topic and guiding us constantly throughout the preparation of the manuscript.

Bibliographical references

[1] BLL Review: 1(1), p. 22, 1973.

[2] Anderson, J.D.: Foreign language barriers in information transfer. Journal of Education for Librarianship 14(3), 172, 1974.

[3] Guha, B.: Pools and tools of translation. Libra, 11, 31-37, 1973-74.

[4] Wood, D.N.: Foreign language problem facing scientists and technologists in the United Kingdom - report of a recent survey. Journal of Documentation, 23(2), p. 119, 1967.

[5] Lea, G, Liment, J. & Harvey, A.P.: Geological literature In Kent, A, Lancour, H & Dailey, J. ed. Encyclopedia of library and information science Vol. 9, p. 314-16, 1973.

[6] Sen, B.K.: Report on UNIDO-Unesco inter-regional training course, 1973, INSDOC, p. 66. 1975.

[7] Ranganathan, S.R.: Triangle in translation service. DRTC Seminar 7th, Vol. 2, p. 554, 1969.

APPENDIX - I

Sl. No.	Name of the Service	Frequency	Material		Subject Covered	Languages		Index
			Translations only	Translations, Reports, Thesis		From	To	
1	2	3	4	5	6	7	8	9
1.	BLL Announcement Bulletin (includes translations) 1973-	M			All	?	?	?
2.	Bibliography of Medical Translations (extracted from Technical Translations) 1964-66				Medical	All	English	*
3.	Bibliography of Scientific and Industrial Research 1946-53				Science Technology Social Sciences	All	English	* Annual
4.	Bibliography of Translations from Russian Scientific and Technical Literature 1953-56...				Science Technology Social Sciences	Russian	English	*
5.	Bibliography-Index to Current USJPRS Translations - China and Asia 1962-				-do-	Chinese Asian	English	*
6.	Bibliography-Index to Current USJPRS Translations - East Europe 1962-				-do-	East European	English	*
7.	Bibliography-Index to Current USJPRS Translations - International Development 1962-				-do-	All	English	*
8.	Bibliography-Index to Current USJPRS Translations - Soviet Union 1962-				-do-	Russian	English	*
9.	Books received from USSR and Translated Books 1957-				?	Russian & East European	European	?

Continued

1	2	3	4	5	6	7	8	9
10.	Consolidated Index of Translations in English (CITE) 1969				Science Technology Social Sciences	All	English	14 years
11.	Government Reports Announcements (GRA) 1971-	Two weekly			-do-	All	English	?
12.	Government Reports Index (GRI) 1971-	-do-			-do-	All	English	?
13.	Index Translationum 1949-	A			All	All	European	Annual
14.	Iron and Steel Translations 1958	W			Iron and Steel	All	English	*
15.	List of Translations notified to ETC 1966-1970. (Merged with World Index of Scientific Translations)	Twice monthly			Science Technology Social Sciences	Eastern & East European	European	*
16.	LLU Translations Bulletin 1959-60 (Continued as NLL Translations Bulletin)				-do-	-do-	English	*
17.	Monthly Index of Russian Accessions (Table of Contents Translated) 1948-69				All	Russian	English	
18.	NLL Announcement Bulletin (includes translations) 1971-72 (Continued as BLL Announcement Bulletin)	M			Science Technology Social Sciences	All	English	?
19.	NLL Translations Bulletin 1961-1970 (Continued in part in NLL Announcement Bulletin)	M			-do-	Upto 65 only Eastern & East European from 66 All	English	*
20.	Nuclear Science Abstracts (NSA) 1947-	SM			Nuclear	?	?	
21.	Scientific and Technical Aerospace Reports: (STAR) 1963-	SM			Aerospace	All	English	*
22.	Scientific and Technical Quarterly Index 1970-				Science Technology Social Sciences	All	English	?
23.	SLA List of Translations 1953-56				-do-	All	English	?
24.	Technical Translations 1959-67	Twice a month			-do-	All	English	

Continued.

1	2	3	4	5	6	7	8	9
25.	Transatom Bulletin 1961-	M			Nuclear	Eastern & East European	Eastern European	* 5 years cummulation
26.	Translations Monthly 1955-58	M			Science Technology Social Sciences	All	English	*
27.	Translations Register-Index 1967-	M			-do-	All	English	Quarterly, Annual card index at NLL
28.	United States Atomic Energy Commission Translations List 1957-							
29.	United States Government Research and Development Reports (USGRDR) 1956-70 (Continued as Government Reports Announcements)	SM			Science Technology Social Science	All	English	
30.	United States Government Research and Development Reports-Index (USGRDR) 1956-70 (Continued as Government Reports Index)	SM			-do-	All	English	Annual
31.	World Index of Scientific Translations 1967-70) (Merged with List of Translations notified to ETC)	Q			-do-	Eastern & East European	European	Quarterly, Annual
31.	World Index of Scientific Translations and List of Translations Notified to ETC 1971-	M			-do-	-do-	-do-	-do-

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*Translations upto 1966 included in CITE

APPENDIX - II

Sl. No.	Title of the periodical	Number of papers translated into English in the following years			
		1970	1971	1972	1973
1	2	3	4	5	6
1	Avtomobilnaya Promyshlennost - USSR	5	33	45	-
2	Beton I Zhelezobeton - USSR	3	28	24	-
3	Energetiyka-Poland	18	13	2	-
4	Energomashinostroenie-USSR	18	31	5	-
5	Gazovaya Promyshlennost-USSR	15	21	23	-
6	Hutnicke Listy-Czechoslovakia	19	38	103	25 (?)
7	Hutnik-Czechoslovakia	8	25	77	6 (?)
8	Izvestiya Vuz. Chernayax Metallurgiya-USSR	33	48	236	63 (?)
9	Izvestiya Vuz. Khimiya I.- Khimicheskaya Teckhnologiya-USSR	8	19	14	-
10	Izvestiya Vuz Nefi I Gaz-USSR	12	16	11	-
11	Izvestiya Vuz Tekhnologiya Legkoi Promyshlennosti-USSR	3	12	32	1 (?)
12	Khimicheskaya Promyshlennost-USSR	15	11	21	1 (?)
13	Khimicheskaya Promyshlennost Za Rubezhom-USSR	6	13	5	-
14	Khimicheskie Velokna-USSR	10	20	34	13
15	Khimiya I Tekhnologiya Topliv I Maset-USSR - Title varies 1956-57 No. 1 Khimiya I Tekhnologiya Topliva. 1957. Nos. 2-12. Khimiya I Tekhnologiya Topliva I Masel	6	17	7	-
16.	Khimiya Tverdogo Topliva-USSR	3	15	14	-
17	Kholodilnaya Tekhnika-USSR	2	14	1	-
18	Kogyo Kagaku Zasslie-Japan	12	11	-	-
19	Koks, Smola, Gaz-Poland	4	11	12	-
20	Kovove Materialy-Czechoslovakia	-	17	12	10
21	Kuznechno-Shtampovochnoe Proizvodeotvo-USSR	8	24	21	-
22	Maslozhirovaya Promyshlennost-USSR	4	12	11	-
23	Mekhanizatsiya I Avtomatizatsiya Proizvodstva-USSR	3	11	3	-
24	Mekhanizatsiya I Avtomatizatsiya Upravteniya-USSR	1	6	2	-
25	Mekhanizatsiya I Elektrifikatsiya Sotsialisticheskogi Selskogo Khozyaistva-USSR	3	6	15	-
26	Metallurgicheskaya I Gornorudnaya Promyshlennost-USSR	5	39	22	-
27	Metalurgia-Rumania	4	15	51	-
28	Moskovskii Universitet. Vestnik. Ser. 5. Geografiya-USSR	-	3	12	4
29	Neftopererabotka I Neftekhimiya-USSR	16	27	12	2
30	Neftyanoe Khozyaistvo-USSR	14	12	9	-
31	Nenryo Kyokai-Shi-Sap	1	14	9	-
32	Nihon Kinzoku Gakhai-Ski-Japan	6	14	16	-

Continued

1	2	3	4	5	6
33	Priroda-USSR	2	7	11	9
34	Promyshlennoe Stroitelestvo-USSR	1	26	20	-
35	Przemysl Chemiezny-Polan	7	22	18	-
36	Rybnoe Khozyaistvo-USSR	1	9	9	-
37	Sekiyu Gakhai Shi-Japan	6	24	13	1
38	Slevarenstvi-Czechoslovakia	8	13	11	1
39	Stroitelnyl I Dorozhnyl Mashiny-USSR	3	15	13	-
40	Stroitelnye Materialy-USSR	8	13	6	1
41	Sudostroenie-USSR	2	12	10	-
42	Svetotekhnika-USSR	3	8	21	1
43	Tekstilnaya Promyshlennost-USSR	4	10	68	9
44	Tetsu to Hagane-Japan	9	67	60	4
45	Tetsu to Hagane. Special	8	36	21	-
46	Veterinariya. Moscow-USSR	-	16	15	-
47	Vsesoyuznyi Nauchno-Issledovatelskii Inst. Morskogo Rybnogo Khozyaistva I Dkeanografii. Trudy-USSR	-	43	-	-
48	Vysokomolekulyarnye Soedineniya. Ser B-USSR (Ser A completely translated cover-to-cover)	3	14	27	-
49	Zhurnal Nauchnoi I Prikladnoi Fotografii I Kinematografii-USSR	13	24	26	-

INDIAN SERIAL PUBLICATIONS RELATING TO SCIENCE AND TECHNOLOGY POLICY

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The extremely scattered nature of literature of Science and Technology Policy (STP) and the consequent need for bibliographical control have been discussed. Presents a list of Indian primary periodicals, abstracting and indexing services and daily newspapers which carry and cover the literature of STP.

The nature of research and studies in Science and Technology Policy (STP) is such that it does not fit into any one of the already existing academic departments, e.g., Commerce, Economics, Engineering, Medicine, Physics, Chemistry and Zoology, etc., which are generally discipline oriented. Therefore, literature in STP is mostly found scattered in several serial publications, books, monographs, reports of government departments, public and private organisations and records of individuals interested in this emerging field of knowledge. Serial publications in the field of STP, as in any other area, is considered as one of the most important source of upto date information for research scholars. As the field is quite new there is no single journal devoted to this area of study. Also there is no bibliographic control on the literature which is coming out in different forms from time to time. This has made the task of research scholars difficult because they do not know where to look for the material. Hence it has been considered imperative to bring out a list of serials covering STP literature.

Indexing and Abstracting Services

Potential usefulness of serial publications depends on the availability of subject indexes. There are over 200 indexing and abstracting services in India. One of these services Current Literature on Science of Science is directly related to the abstracting of current literature of STP. It endeavours to cover literature published from India as well as abroad, but its scope is limited to a few serial titles. At present this is the only abstracting service on STP. There is but little coverage to the output of literature in India on this subject, which is scattered through several serial publications. Therefore, the researcher has to find his way through the maze of many indexing and abstracting services currently issued from the country. A list of these services has been prepared keeping in view their wide scope and subject contents as related to STP studies.

List of Serials on STP

Earlier a list of some Indian Periodicals on Science Affairs has been published in Science in India by Ward Morehouse (1971). It lists only 22 titles. UNESCO is also compiling a world list of periodicals related to STP studies. A detailed list of Indian serial publications in the English language, with the broadest connotation of the term STP has been presented in this paper to facilitate studies in this new emerging interdisciplinary study. Serials which have ceased publication have been listed separately. All the serial publications mentioned in the List of Ward Morehouse and in the UNESCO Survey Questionnaire have been listed in the present list. Other titles listed here have been selected primarily for their potential to enrich one or more aspects of the STP studies. Government serial publications like Annual Reports of the Departments have not been included in this list.

Since each issue of a journal contains a number of articles, there is a great possibility that a given title will relate to a variety of interests and subject areas. For this reason there is every possibility that some titles might properly be included in the lists relating to other subject areas and vice-versa. The criteria of authenticity, relevancy and uptodateness have been considered for the selection of periodical titles in this list.

Daily Newspapers

Most of the Indian daily newspapers now-a days carry articles, editorials and news items dealing with scientific and technological affairs. News items provide latest information and the articles and editorials give critical appraisal of current affairs. At present 78 daily newspapers are published in English from different cities.[3]. Some are published simultaneously from more than one place. Instead of listing all the newspapers only those, which are indexed in the Indian Press Index have been included in this list. Exclusion of several newspapers in no way reflects on the coverage of STP matters by them. As certain newspapers are indexed, it becomes convenient to retrieve information reported in them. Hence only those newspapers which are indexed have been included in this list.

Periodicals on STP

Serial publications listed here deal with Indian science affairs and also publish articles and editorials on these affairs from time to time. However, there is hardly any Indian periodical devoted entirely to the STP studies, except one abstracting service mentioned above. Interest in this field has now increased to such an extent that the Central Government has established a separate Department for Science and Technology. Also teaching facilities have been established in the Jawaharlal Nehru University to pursue post-graduate studies and research. Facilities for research are also available in the Council of Scientific and Industrial Research, New Delhi, and the Administrative Staff College of India, Hyderabad. It is, therefore, considered imperative that the research studies in this new emerging field should get proper professional appraisal, criticism and evaluation in the overall output of Indian research literature so that the STP studies have sound footing and smooth growth. Hence, it is desirable that a professional journal in science and technology policy studies be started early at the national level.

Bibliographic Control of STP Literature

Further, as mentioned earlier, there is no comprehensive bibliographic control of literature on this subject. According to an estimate made by UNESCO about 31500 references (excluding the production of science based enterprises) are published yearly throughout the world on STP "and this figure probably represents a minimum. The breakdown by regions gives the following percentages : Europe 52%; North America 23%; Asia 8%; Africa and Arab States 7%; North America 4%; International organisations 6%. As regards the types of documents 55% consists of articles in periodicals, 18% of non conventional literature, 18% in the form of books, and 9% consists of laws and regulations." This enormous amount of literature has to be provided proper bibliographic control. Accordingly, UNESCO is striving to issue an abstracting service covering world output of literature on STP through its project "Science and Technology Policies Information Exchange System (SPINES)" [4]. This service will be operating with the active participation of different countries who would also act as input centres. The service is expected to commence from 1976. Indian literature will, of course, be covered by the UNESCO service, if not at the initial stage, but certainly at the second stage. However, a national bibliographic control on the output of literature on STP is considered necessary.

It may not be possible for a single body to provide comprehensive control because of several organisational constraints. A cooperative venture based on mutual trust between interested institutions may prove more fruitful. Earlier, a national bibliographic service is started, the better. It would be then comparatively easy to cooperate with UNESCO and also provide a reference tool to the research scholars.

Concluding Remarks

Due to the nature of the subject and need for precise terminology, the reading and understanding of STP literature is more difficult than the literature of many other areas. Consequently, many more titles may be suitable for inclusion in the present list. Any suggestions to improve this list would be appreciated. At present a gap exists because there is neither a professional journal nor any bibliographic control on the output of literature in this field. These gaps need to be filled immediately to provide impetus to research and study in STP studies in the country.

References

[1] Morehouse, Ward. Science in India : Institution building and the organizational system for research and development, Bombay Popular Prakashan for Administrative Staff College of India, Hyderabad, 1971. 144 pp.

[2] UNESCO Questionnaire UNESCO/NS/ROU/282 dated 28 May 1973.

[3] Press in India, 1972. Sixteenth Annual Report of the Registrar of Newspapers for India under the Press and Registration of Books Act. Part I, New Delhi, Ministry of Information and Broadcasting, 1973. p.18.

[4] A system for exchanging information on Science and Technology Policies. UNESCO Chronicle, 1974 22(5-6), 205-209.

LIST OF INDIAN SERIALS ON SCIENCE AND TECHNOLOGY POLICY

This list has been divided into the following four parts - A) Indexing and Abstracting Services; B) Periodical Publications; C) Daily Newspapers; and D) Ceased Publications. Entries under each part are listed alphabetically giving the following bibliographic details - Title; Year of first publication; Periodicity; Publisher and the Place of publications. In the case of Daily Newspapers only Title, Publisher and Place of publication is given.

A). INDEXING & ABSTRACTING SERVICES:

1. Appropriate technology Documentation Bulletin, 1974-, 4/12. Small Industry Extension Training Institute, Hyderabad.
2. Current Literature on Science of Science, 1972-, 12/12. Council of Scientific and Industrial Research, New Delhi -1.
3. Current Management Literature, 1970-, 12/12. Administrative Staff College of India Library, Hyderabad.
4. DESIDOC List, Current Scientific Literature, 1964-, 24/12. Defence Scientific and Documentation Information Centre, Delhi 6.
5. Index India, 1967-, 4/12. Rajasthan University Library, Jaipur.
6. Indian Education Abstracts, 1955-, 12/12. Central Secretariat Library, Ministry of Education, New Delhi.
7. Indian Press Index, 1968-, 4/12. Delhi Library Association. Delhi.
8. Indian Science Abstracts, 1965-, 12/12 Indian National Scientific Documentation Centre, CSIR, New Delhi.
9. Management Abstracts, 1972-, 4/12. All India Management Association, New Delhi.
10. Manpower Documentation, 1972-, 4/12 Documentation Centre, Institute of Applied Manpower Research, New Delhi.
11, News Reviews on Science and Technology, 19-, 12/12. Institute of Defence Analysis. New Delhi.
12. Productivity Documentation, 1972-, 12/12 National Productivity Council, New Delhi.
13. Public Administration Abstracts, 1957-, 12/12. Indian Institute of Public Administration, New Delhi.

B) PERIODICALS

1. Agricultural Situation in India, 1944-, 4/12 . Directorate of Economics and Statistics, Ministry of Agriculture, New Delhi.
2. Bulletin of the All India Institute of Medical Sciences, 1967-, 4/12, All India Institute of Medical Sciences, New Delhi.
3. Bulletin of the Association of the Scientific workers of India. 1971-, 12/12. Association of the Scientific workers of India, New Delhi.
4. CSIR News, 1951-, 12/12. Council of Scientific and Industrial Research, New Delhi.
5. Capital, 1888-, 52/12. Capital Pvt. Ltd., Calcutta.
6. Chemical Age of India, 1949-, 12/12. Technical Press Publications, Bombay.
7. Commerce, 1910-, 52/12. Commerce Ltd., Bombay.
8. Current Science 1932-, 12/12. Current Science Association, Bangalore.
9. Eastern Economist, 1934-, 52/12. Eastern Economist Ltd., New Delhi.
10. Economic and Political Weekly, 1966-, 52/12. Sameeksha Trust, Bombay.
11. Economic Studies, 1960-, 12/12. Economic Studies and Journals Pvt., Ltd., Calcutta.
12. Everyman's Science, 1966-, 12/12. Indian Science Congress Association, Calcutta.
13. Fertiliser News, 1957-, 12/12. Fertiliser Association of India, New Delhi.
14. Foreign Trade Review, Quarterly Journal of Indian Institute of Foreign Trade, 1966-, 4/12. Indian Institute of Foreign Trade, New Delhi.
15. ICMR Bulletin, 1971-, 12/12. Indian Institute of Medical Research, New Delhi.
16. ICSSR Newsletter, 1965-, 4/12. Indian Council of Social Science Research, New Delhi.
17. Indian & Eastern Engineer, 1858-, 12/12. Sohrab House, 235 Dr. D. Naoroji Road, Bombay.
18. Indian Chemical Engineer, 1959-, 4/12. Sevak Publications, Bombay; for Indian Institute of Chemical Engineer, Calcutta.
19. Indian Engineering Exporter, 1957-, 12/12. Engineering Export Promotion Council, Calcutta.
20. Indian Journal of History of Science, 1966-, 2/12. Indian National Academy of Science, New Delhi.
21. Indian Journal of Medical Education, 1961-, 4/12. Orient Longman for the Indian Association for the Advancement of Medical Education, Bombay, etc.

22. Indian Journal of Medical Research, 1912-, Indian Council of Medical Research, New Delhi.

23. Indian Journal of the History of Medicine, 1956-, 2/12. Indian Association of the History of Medicine, Madras.

24. Indian Journal of Public Administration, 1955-, 4/12. Indian Institute of Public Administration, New Delhi.

25. Indian Management 1961-, 12/12. All India Management Association, New Delhi.

26. Indian Political Science Review, 1968-, 2/12, University of Delhi, Department of Political Science, Delhi. 6.

27. Journal of Food Science and Technology, 1964-, 4/12. Central Food Technological Research Institute, Mysore.

28. Journal of Scientific and Industrial Research 1942-, 12/12. Council of Scientific and Industrial Research, New Delhi.

29. Journal of the Indian Society of Agricultural Statistics, 1949-, . Indian society of Agricultural Statistics, New Delhi.

30. Link, 1958-, 52/12. United Indian Periodicals, Pvt. Ltd., Link House, New Delhi.

31. Lok Udyog, 1967-, 12/12. Bureau of Public Enterprises, Ministry of Finance, New Delhi.

32. Mainstream, 1963-, 52/12. Perspective Publications Pvt. Ltd., New Delhi.

33, Manpower Journal, 1963-, 4/12. Institute of Applied Manpower Research, New Delhi.

34. Nuclear India, 1962-, 12/12. Department of Atomic Energy, Bombay.

35. Oil Commentary, 1962-, 26/12. Petroleum Information Service, New Delhi.

36. Philosophy and Social Action, 1975-, 4/12. Institute of Socio-Economic Dynamics, New Delhi.

37. Productivity, 1959-, 4/12. National Productivity Council, New Delhi.

38. Quarterly Scientific Opinion 1972-, 4/12. Vardan Printing Press, Model Town, Jullunder.

39. R & D Digest, 1961-, 6/12. Research and Development Organisation, Ministry of Defence, New Delhi.

40. Research and Industry, 1956-, 4/12. Council of Scientific & Industrial Research, New Delhi.

41. Science & Culture, 1935-, 12/12. Indian Science News Association, Calcutta.

42. Science and Engineering, 1948-, 6/12. Indian Society of Engineers, Calcutta.

43. Science Reporter, 1964-, 12/12. Council of Scientific and Industrial Research, New Delhi.

44. Science Today, 1960-, 12/12. Bennett Coleman & Co. Ltd., Bombay.

45. Sciencetech Bulletin, 1975-, 12/12. National Committee on Science and Technology, New Delhi.

46. Seminar, 1959-, 12/12. Malhotra Building, Janpath, New Delhi.

47. Social Change, 1971-, 3/12. Council for Social Development, New Delhi.

48. Social Scientist, 1972-, 4/12. Indian School of Social Sciences, New Delhi.

49. Social Welfare, 1954-, 12/12. Central Social Welfare Board, New Delhi.

50. Sociological Bulletin, 1951-, 2/12. Indian Sociological Society, Department of Sociology, Delhi School of Ecnomics, Delhi University, Delhi.

51. Technical Manpower, 1959-, 12/12. Division of Scientific & Technical Personnel, CSIR, New Delhi.

52. University Affairs, 1973-, 12/12. 4/37, Roop Nagar, Delhi.

53. University News, 1963-, 12/12. Inter-University Board of India & Ceylon, New Delhi.

54. Weekly Round Table 1972-, 52/12. Round Table Publications Pvt. Ltd., New Delhi.

55. World Science News, 1964-, 12/12. 5, Kohinoor Building, Katra Baryan, Delhi.

56. Yojana, 1957-, 24/12. Planning Commission, New Delhi.

C) DAILY NEWSPAPERS

1. Amrita Bazar Patrika, 1868, Amrit Bazar Pvt. Ltd., Calcutta.

2. Assam Tribune, 1946, Tribune Press. Gauhati

3. Deccan Chronicle, 1938. The Deccan Chronicle Press, Secunderabad.

4. Deccan Herald, 1948. The Printers Pvt. Ltd. Bangalore.

5. Economic Times, 1961, Bennett Coleman & Co., Ltd., Simultaneously published from Bombay and Delhi.

6. Financial Express, 1961, Indian Express News Papers Pvt. Ltd., Simultaneously published from Bombay and New Delhi.

7. Free Press Journal, 1930. Indian National Press Pvt. Ltd., Bombay.

8. Hindu, 1878. Kasturi & Sons Ltd., Madras Simultaneously published from Bangalore Coimbatore and Madras.

9. Hindustan Times, 1924. Hindustan Times Ltd. New Delhi.

10. Hindustan Standard, 1937. Ananda Bazar Patrika Pvt. Ltd., Calcutta

11. Hitvada, 1911. The Servants of Indic Society, Poona. Simultaneously published from Bhopal and Poona.

12. Indian Express. 1953. Indian Express News Papers Pvt. Ltd. Simultaneously published from Ahmedabad, Bangalore, Bombay, Cochin, Madras, Madurai, and Vijayawada.

13. Indian Nation, 1930. Newspapers and Publication Pvt. Ltd., Patna.

14. Madhya Pradesh Chronicle, 1957, Madhya Pradesh Chronicle Printing Press, Bhopal.

15. Mail, 1867. Associated Publishers Pvt. Ltd., Madras-2.

16. National Herald, 1968. Associated Journals Ltd., Simultaneously published from Lucknow and New Delhi.

17. Northern Indian Patrika, 1959. Allahabad Patrika Pvt. Ltd., Allahabad.

18. Patriot, 1963. Raisina Publications Ltd., New Delhi.

19. Pioneer, 1865. Pioneer Ltd., Lucknow.

20. Statesman, 1930. The Statesman Ltd., New Delhi. Simultaneously published from Calcutta and New Delhi.

21. Searchlight, 1919. Bihar Journals Ltd. Patna.

22. Times of India 1838. Bennett Coleman & Co. Ltd., Simultaneously published from Ahmedabad, Bombay and New Delhi.

23. Tribune, 1881. The Tribune Trust, Chandigarh.

D) CEASED PUBLICATIONS

1. Bulletin of the Department of History of Medicine, 1963-1966. 4/12. Osmania College, Hyderabad.

2. Citizen and Weakend Review, 1969-1970. 24/12. Impact Publications Pvt. Ltd., New Delhi.

3. Index to Current R & D Literature, January, 1965 - September 1966. 12/12. Survey & Planning of Scientific Research Unit, CSIR, New Delhi.

   Continued as 'Index to Literature on Science of Science, October 1966-1971.

4. Index to Literature on Science of Science, October, 1966-1971. 12/12. Research Survey & Planning Organisation, CSIR, New Delhi.

   Formerly Index to Current R & D Literature, January. 1965-September 1966. Continued as Current Literature on Science of Science, January, 1972.

5. Science in Parliament, 1963-1965. 4/12. Indian Parliamentary and Scientific Committee, New Delhi.

6. Vijnan Karmee, 1949-1969. 12/12. Association of Scientific Workers of India, New Delhi.

INDIC NAMES AND COMPUTERS

S K Gupta
A R Chakraborty
Insdoc Trainees, 1974-75
S B Ghosh
Geological Survey of India, Lucknow
B K Sen
Insdoc, New Delhi-12

The Institute for Scientific Information, Philadelphia, Pa has kept a provision of accommodating 12 letters for surnames for its publications like Science Citation Index, Who is Publishing in Science, etc. This has resulted in mutilation of a considerable number of Indic names. This study was taken up to find out the percentage and category of Indic names, which would be affected if the limit is fixed at 12 letters. The study reveals that about 6% of Indic names are having 13 to 24 letters, amongst which South Indian names come first, followed by Bengali, Muslim and Christian names. If the limit is fixed at 16 letters, only 1% Indic names are affected. Very few Indic names will be affected if the limit is fixed at 20 letters.

Introduction

The great diversity of Indic names has always baffled cataloguers throughout the world, and it is this factor which has made them well known not only within but also far beyond our own boundaries; in addition it has also earned Indic names a well-deserved place in the international cataloguing codes. Possibly even two decades ago nobody might have thought that these Indic names could again pose a problem when library science enters computer age.

The problem posed by Indic names this time is of different nature. It is neither of surname nor of forename, but of the inordinate length. Sometimes the last part of the name, under which entries are usually made comprises more than 20 letters. In the world as a whole this phenomenon is extremely rare. Surnames beyond 12 letters in the world are not frequented often and as such Institute for Scientific Information (ISI), Philadelphia, Pa. has fixed a limit of twelve letters for surnames for its publications like Science Citation Index, Current Titles, Who is Publishing in Science, International Directory of Research and Development Scientists, etc. Due to computer limitation, portion of the name beyond twelve letters is being dropped causing mutilations of names.

Varieties of mutilations

Three types of mutilations of Indic names are observed in these publications :

i) Mutilation of the forename
ii) Mutilation of the second portion of the name
iii) Mutilation of the last portion of the name

In the first category, names like DAN SINGH, DHAN SINGH, DURLOV SINGH have been rendered as D. SINGH. In the second category, names like B.T. ANTONY RAJA, N. BASHER AHMED have been rendered as B.T.A. RAJA, N.B. AHMED and so on. The abbreviation of the full forename or middle portion of the name to initial letters does not invite that much of a problem as the dropping of the letters beyond 12th letter from the surname or last part of the name. Due to this type of axing names like RADHAKRISHNAMURTI, RADHAKRISHNASETTY are rendered as RADHAKRISHNA; RAMAKRISHNAPILLAY and RAMKRISHNASASTRI as RAMAKRISHNAP and RAMAKRISHNAS respectively. Lot of examples of this type can be cited. All these reduce individuality of names to a great extent and thereby pose problem of identification.

Purpose of the study

The purpose of the study is firstly to draw the attention of all concerned to the problem created by the inordinately long Indic names and the problem of rendering them with the help of computer; and secondly to find out which category and what per centage of Indic names are mostly affected by this limitation of computer and to offer a solution to this problem.

Methodology

For this study cumulative index of Indian Science Abstracts 1968, 1970, 1972 and investigator index of Directory of Scientific Research in Indian Universities, 1974 were taken as a base. As the cumulative index of Indian Science Abstracts 1974 is not yet published, the investigator index of Directory of Scientific Research in Indian Universities was taken for the purpose of 1974 data. The reason for taking these publications as base for this study is that these publications list more or less exhaustively the names of almost all active Indian scientists and thereby the chances of missing large number of names are less.

All the names may not appear in one cumulative index for obvious reasons. That is why author indexes for four years were examined for this study. It goes without saying that some long names have not appeared at all in any of the indexes. But then, their percentage will not be so much as to affect the overall percentage. Indian Science Abstracts is a monthly publication with annual cumulative index from INSDOC and the Directory is a joint production of University Grants Commission and Council of Scientific and Industrial Research. The names of all Indian scientists with more than twelve letters were taken from the author-index of these publications. The list of names thus selected is presented in Appendix A. A representative sample of the names thus selected were compared with their rendering in the computerised publications mentioned earlier and mutilation of such names are confirmed. The data thus obtained are computed and presented in Tables I, II and III.

Findings

From the study it is observed that about six percent of the Indic names are affected by this mutilation of which South Indian names take the lion's share. Of the names liable to mutilation South Indian names account for 85.05%, 90.13%, 82.23%, 86.37% for the years 1968, 1970, 1972 and 1974 respectively. Next in the order comes Bengali followed by Muslim and Christian names. Bengali, Muslim and Christian names account for 11.21%, 1.49%, 1.34% respectively in 1968, 5.24%, 0.74%, 2.24% respectively in 1970, 11.54%, 0.9%, 1.55% in 1972 and 9.64%, 1.37%, 0% respectively in 1974.

Names with more than 20 letters have been found. The number of such names are 2, 8 and respectively in the years 1968, 1970 and 1972. The lengthiest name found in this survey is of 24 letters.

A decrease in the number of names could be observed with the increase in the number of letters, 13-lettered, 14-lettered, 15-lettered and 16-lettered names account respectively for 2.6 to 2.9%, 1.2 to 1.4%, 0.87 to 1.1%, 0.4 to 0.6%. Names with more than 17 letters taken together normally account for less than 1%.

Conclusions

It may not be possible for the publishers of all computerised publications to cover the entire length of all these lengthy indic names just for economic reasons. The number of such lengthy names will be rare in other countries. Alternative and the solution of the problem rests to some extent with the scientists themselves. Mostly two varieties of indic names i.e. South Indian and Bengali names are affected. In most cases last part of the South Indian names are personal names (e.g. Satyanarayana) and in some cases personal and caste names and they are of compound nature like Gangadharan Nair. C. Venkata Raman, the famous scientist, had solved this problem of information science, like many problems in the field of science in an unique manner. He shortened his name to C.V. Raman, without knowing possibly that this may be a clue to a solution of problem in information science in the computer age. Similarly another internationally renowned statistician has shortened his name from C. Radhakrishna Rao to C.R. Rao. If this trend is followed by other South Indian scientists, the problem of rendering names with the help of computers could be solved to a great extent. As regards problematic Bengali names they are also in most cases of compound nature like Basuroychowdhury, Dutta Mazumdar, a combination of two or more surnames. If they voluntarily restrict themselves to use only one surname, a solution may be obtained.

It may be pointed out here that if a provision is kept for accommodating 16 letters for the surname/last part of the names, only 1% Indian names will be liable for mutilation. If the number of letters is increased to 20, then only an insignificant number of names will be affected.

Computers will be used more and more in information retrieval henceforth. Though Indian Science Abstracts has made provision to cover all these lengthy names in its computer programme, it may have to reconsider and adopt the uniform pattern followed throughout the world, to cover a limited number of letters for names for compatability and uniform practice for exchange of information on international basis. So it is high time that serious thought should be given to this problem to arrive at a solution.

Table I

Number and percentage of authors' names having 13 to 24 letters

Year	Total no. of authors in the sample	13 lettered		14 lettered		15 lettered		16 lettered		17 lettered		18 lettered		19 lettered		20 lettered		21 lettered		22 lettered		23 lettered		24 lettered		Total	
		No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
1968	11,060	294	2.66	156	1.41	97	0.87	48	0.43	41	0.36	20	0.18	7	0.06	4	0.04	2	0.02							669	6.05
1970	12,700	333	2.62	151	1.19	140	1.10	82	0.64	38	0.29	27	0.21	16	0.13	8	0.06	6	0.04							801	6.31
1972	13,040	342	2.62	166	1.27	127	0.97	73	0.55	31	0.23	20	0.15	7	0.05	1	0.007	2	0.01	1	0.007			1	0.007	771	5.91
1974	10,700	318	2.95	133	1.24	112	1.04	45	0.42	31	0.29	10	0.09	3	0.02	1	0.009									653	6.10

Table II

Community and Yearwise distribution of authors' names having 13 to 24 letters

Community	Year	13 lettered		14 lettered		15 lettered		16 lettered		17 lettered		18 lettered		19 lettered		20 lettered		21 lettered		22 lettered		23 lettered		24 lettered		Total
		No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	
South Indian	1968	217	38.13	140	24.60	94	16.52	46	8.08	39	6.85	20	3.51	7	1.23	4	0.70	2	0.35							569
	1970	285	39.47	141	19.52	126	17.45	79	10.94	35	4.84	27	3.74	15	2.07	8	1.11	6	0.83							722
	1972	237	37.38	149	23.50	117	18.45	71	11.19	28	4.41	20	3.15	7	1.10	1	0.15	2	0.31	1	0.15			1	0.15	634
	1974	244	43.26	124	21.98	106	18.79	45	7.97	31	5.49	10	1.77	3	0.53	1	0.17									564
Bengalee	1968	63	84.00	9	12.00	2	2.66	1	1.33																	75
	1970	32	76.19	4	9.52	3	7.14	1	2.37	2	4.76															42
	1972	81	91.01	4	4.49	3	3.37	1	1.12																	89
	1974	59	93.65	3	4.76	1	1.58																			63
Muslim	1968	5	50.00	2	20.00	1	10.00			2	20.00															10
	1970	3	50.00			1	16.66	1	16.66					1	16.66											6
	1972	3	42.85	3	42.85	1	14.28																			

Continued

Table II Continued

Community	Year	13 lettered		14 lettered		15 lettered		16 lettered		17 lettered		18 lettered		19 lettered		20 lettered		21 lettered		22 lettered		23 lettered		24 lettered		Total
		No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	
Muslim	1968	5	50.00	2	20.00	1	10.00			2	20.00															10
	1970	3	50.00			1	16.66	1	16.66					1	16.66											6
	1972	3	42.85	3	42.85	1	14.28																			7
	1974	4	44.44	4	44.44	1	11.11																			9
Christian	1968	4	44.44	4	44.44			1	11.11																	9
	1970	8	44.44	3	16.66	6	33.33	1	5.55																	18
	1972	1	8.33	3	25.00	6	50.00	1	8.33	1	8.33															12
	1974																									
Others	1968	5	83.33	1	16.66																					6
	1970	5	38.46	3	23.77	4	30.77			1	7.70															13
	1972	20	68.96	7	24.13					2	6.89															29
	1974	11	64.7	2	11.76	4	23.52																			17

Table III

Community-wise distribution of authors' names having 13 to 24 letters (Summary)

Community	1968		1970		1972		1974	
	No	%	No	%	No	%	No	%
South Indian	569	85.052	722	90.137	634	82.230	564	86.370
Bengalee	75	11.210	42	5.243	89	11.543	63	9.647
Muslim	10	1.494	6	0.748	7	0.907	9	1.378
Christian	9	1.345	18	2.247	12	1.556	--	---
Others	6	0.896	13	1.623	29	3.761	17	2.600
Total	669	100.00	801	100.00	771	100.00	653	100.00

APPENDIX A

LIST OF NAMES HAVING 13 to 24 LETTERS

[N.B. Most of the names occured more than once with different initials].

13 lettered names

ACHUTHANKUTTY
AMRITHALINGAM
ANANTA KRISHNA
ANANTHAMURTHY
ANANTHA RAMIAH
ANJANEYA SARMA
ARVINDAKSHAN
ATCHESAWAR RAO
AURANGA BADKAR
AVUDAINAYAGAM

BALAGOPAL RAJU
BALANARASAIAH
BALANARASIMHA
BALARAMAMURTY
BALARAMAN NAIR
BALARAMI REDDY
BALKRISHNA RAO
BANDOPADHYAYA
BANDYOPADHYAY
BASAVARAJAIAH
BASAVARAJAPPA
BASU CHAUDHARY
BASU CHAUDHURI
BASU CHAUDHURY
BASU CHOUDHURY
BHAGYA LAKSHMI
BHAKTHA VIZIAM
BHASKARAN NAIR
BHASKARA REDDY
BHATTACHARJEE
BHATTACHARRYA
BHATTACHARYYA
BHATTACHERJEE
BHAVANARAYANA
BHIMASANKARAM
BHIMESWARARAO
BHIRMANANDHAM
BHUVANESWARAN
BONDOPADHIAYA
BONDYOPADHAYA
BORRESWARA RAO

CALCUTTAWALLA
CHACKRABURTTY
CHAKRANARAYAN
CHALAPATHI RAO
CHANDRA SEKHAR
CHANDRA SEKHER
CHANDRA SHEKAR
CHANDRA VADANA
CHANDRA VANSHI
CHANDRA WANSHI
CHANNA BASAIAH
CHANNA BASAPPA
CHANNA KESHAVA
CHATTAPADHYAY
CHATTOPADHAYA
CHATTOPADHYAY
CHATTOPADHYYA
CHINAMANIKYAM

DACHUNHA GOMES
DAKSHINA MURTY
DASANNACHARYA
DEVADAS MALLYA
DEVANARAYANAN
DEVA RAJ SARKAR
DEVASENA PATHY
DEVENDRA REDDY
DHANANJAYA RAO
DHARMADHIKARI
DHULAPPANAVAR
DURAPRASAD RAO
DUTTA MAJUMDAR

EDWARD GURURAJ
ELANDT JOHNSON

FAZAL MOHAMMAD
FAZLULLAH KHAN
FRANCIS JOSEPH

GANESHA MURTHY
GANGADHARAIAH
GANGADHARA RAO
GANGOPADHYAYA
GEORGE MICHAEL
GHAFOORUNISSA
GHOSH DASTIDAR
GHOSH MAJUMDAR
GHOSH MAZUMDAR
GIMENEZ MARTIN
GIRISHWARNATH
GNANAPRAGASAM
GNANASUNDARAM
GOPALACHARYLU
GOPALAKRISHNA
GOPALA RATHNAM
GOPALKRISHNAN
GOVINDA GOWDER
GOVINDANKUTTY
GOVINDA RAJALU
GOVINDA RAJULU
GOVINDA RANJAN
GOWRI SANKARAN
GURUSWAMY RAJA

HANUMANTHAPPA
HANUMANTHA RAO
HARAPANAHALLI
HARIHARAYYAR

JAGADESWAR RAO
JAGADISH KUMAR
JAGANNADHA RAO
JAGANNATHA RAO
JANAKIRAMAIAH
JANARDHANA RAO
JAVANTHEESWAR
JAYA RAMA REDDY
JAYARAMI REDDY
JITENDRA MOHAN
JOSEPH FRANCIS

KAILASHNATHAN
KALIYAPERUMAL
KALYANSUNDRAN
KAMALAKARA RAO
KANAKA LAKSHMI
KANKARAJ DAVID
KARAMCHANDANI
KASICHAYANULA
KASIVISWANATH
KASTURI RANJAN
KESHAVACHARYA
KESHAVAMURTHY
KOCHAPPANNAIR
KOTHANDARAMAN
KRISHNA KANTHA
KRISHNAMACHAR
KRISHNA MALLIA
KRISHNA MURTHI
KRISHNA MURTHY
KRISHNANANDAM
KRISHNANKUTTI
KRISHNAN KUTTY
KRISHNA PILLAI
KRISHNA PILLAY
KRISHNA PRASAD
KRISHNA SASTRY
KSHETRAPALIAH
KUDARATHULLAH
KULANDAISWAMY
KUNJAMAHRISHI

LAKSHMARAYANA
LAKSHMIKANTHA
LAKSHMI KUMARI
LAKSHMI NARAIN
LAKSHMI NARYAN
LALITHA KUMARI
LAXMINARAYANA
LEELANANDA RAO
LUCYCHANNAMMA

MADALGATTI RAO
MADANAGOPALAN
MADANMOHANRAO
MADHAVANKUTTY
MADHUSUDAN RAO
MAHALAKSHAMMA
MAHALUXMIVALA
MAHARAJA SARAN
MAHERCHANDANI
MALLESWARA RAO
MALLIKARJUNAN
MALLIKHARJUNA
MANJUNATHAIAH
MANOHARACHARY
MARAYANA SWAMY
MARIAKULANDAI
MARIMUTHAMMAL
MATHRUBHUTHAM
MOHAMED GHOUSE
MOHAMEDMUBEEN
MOHAMMED SALIH
MUDDAVEERAPPA
MUKHOPADHAYAY
MUKHOPADHYAYA
MULLAKHANBHAI
MURALEEDHARAN
MURALIKRISHNA
MUSHRAFFUDDIN
MUSTAFA HUSAIN
MUTHUKRISHNAN

NAGABHUSHANAM
NAGAPPAN NAYAR
NAGARAJA NAIDU
NAGARAJA SARMA
NAGARAJA SETTY
NAGENDER NAIDU
NAGESH CHANDRA
NAMBOODIRIPAD
NAMPERMALSAMY
NANJUNDASWAMY
NARASIMHACHAR
NARASIMHARAJU
NARAYANA MURTI
NARAYANA REDDI
NARAYANA REDDY
NARAYANA SWAMI
NARAYANA SWAMY
NARAYANA SWANY
NARAYAN PRASAD
NATARAJA SARMA
NITYANANDA RAO

OTTO BENDFELDT

PADMANABHAIAH
PADMANABHA RAO
PANCHAPAKESAN
PANDHARIPANDE
PANDURANGARAO
PANEMANGALORE
PANNEERSELVAN
PARAMANAYAKAM
PARAMASIVAIAH
PARAMBARAMANI
PARAMESHWARAN
PARASURAMAIAH
PARDHASARADHI
PARDHASARATHY
PARIMELALAGAN
PARTHASARADHI
PARTHASARADHY
PARTHASARATHI
PARTHASARATHY
PARVATHA REDDY
PATIL KULKARNI
PFURTSCHELLER
POCHKHANAWALA
POORNACHANDRA
PRABHAKARA RAO
PRABHA SHANKAR
PRABHA SHANKER
PRAHALLADA RAO
PRASANNA KUMAR
PRATHAPASENAN
PREMASUNDARAN
PREMVEER REDDY
PURUSHOTHAMAN
PUSHPANGADHAN
PUTHISIGAMANY
PUTTARUDRAPPA

RABINDRA REDDY
RADHAKRISHNAN
RADHA MOHAN RAO
RAGHOTHAMA RAO
RAGHUNADHA RAO
RAGHUNANDANAN
RAGHUNATHA RAO
RAGHUPATHI RAO
RAGHVENDER RAO
RAJAGOPALA RAO
RAJARAJESWARI
RAJASEKARAIAH
RAJASEKHARIAH
RAJENDRA SINGH
RAMACHANDRUDU
RAMAIAH CHETTY
RAMAKOTI REDDY
RAMAMOHANA RAO
RAMANARAYANAN
RAMANJANEYALU
RAMATULASAMMA
RAMCHANDRAIAH
RAMCHANDRA RAO
RANGANADHA RAO
RANGANATHAIAH
RANGANATHA RAO
RATAN CHANDANI
RATHAKRISHNAN
RAVINDRAN NAIR
RAWICZ SCZERBO

SAAHASRABUDHE
SACHIDANANDAN
SAHASRABUDDHE
SAHASRABUDHEY
SAKTHIVADIVEL
SAKUNTALA DEVI
SANJEEVA REDDY
SANKARALINGAM
SANKARANKUTTY
SANKARAPILLAI
SANKERNARAYAN
SANTHAKUMARAN
SANTHALAKSHMI
SANTHANARAMAN
SAARATCHANDRA
SATHIAMOORTHY
SATHIANANDHAM
SATHIA NANDHAN
SATHIA VAKESAN
SATHYA NANDHAM
SATHYA NARAYAN
SATHY NARAYANA
SATYA BODHA RAO
SATYA NARAYANA
SCHLAGENHAUFF
SEETHARAMAYYA
SEETHARAMNATH
SESHAVATHARAM
SETHUMADHAVAN
SETHUMATHAVAN
SHANKARA GOWDA
SHANKARA SETTY

SHANKARE GOWDA
SHANKARI GOWDA
SHANTHA KUMARI
SHIVANANDAPPA
SHIVARUDRAPPA
SHRINAGARPURE
SHYAMA SUNDARI
SIDDAGANGAPPA
SIDDALINGAIAH
SINGARACHARLU
SINGHDHAKAREY
SITARAMASWAMY
SIVARAMA REDDY
SIVARAMI REDDY
SOUNDARA RAJAN
SREENIVASAIAH
SREENIVASA RAO
SREE RANGA SAMY
SRI HARI NAGORI
SRINIVASACHAR
SRIRANGARAJAN
SUBRAHAMANYAM
SUBRAMONIIYER
SUDARSANA RAJU
SUDHAKAR NAYAR
SUMANGALAAMMA
SUMATHI KUMARI
SUNDARA MURTHY
SUNDARARAJULU
SUNDARESWARAN
SURYANARAYANA
SURYA NARYANAN
SUVARNA KUMARI

TAJMUL HUSSAIN
THANDAVARAYAN
THANDAVESWARA
THANIKACHALAN
THEETHARAPPAN
THIMMA RAYAPPA
THIRUMALACHAR
THIRUVATHUKAL
THIRUVENGADAM
THIVIRENGADAM
THOMPSON WEELS
THYAGARAJA RAO
TIRUNARAYANAN
TRIVIKRAMA RAO

VAITHIALINGAM
VAJRANABHAIAH
VALMIKINATHAN
VANAMALANAIDU
VANITHAKUMARI
VARADHARAJULU
VASANTHA RAJAN
VASUDEVAN NAIR
VEERANARAYANA
VEERARAGHAVAN
VENKATACHALAM
VENKATACHALAN
VENKATACHARYA
VENKATAPPAIAH

VENKATAPPAYYA
VENKATA RAMANA
VENKATA RAMANI
VENKATA RAMANY
VENKATARAMIAH
VENKATARANGAN
VENKATA RATNAM
VENKATA RAYUDL
VENKATA RAYUDU
VENKATASUBBAN
VENKATESWARAN
VENKATESWARLU
VENKITACHALAM
VENKITESWARAN
VENUGOPALA RAO
VIDHYASEKARAN
VIDURASHWATHA
VIJAYA LAKSHMI
VIJAYA LEKSHMI
VIJAYA SARATHY
VIJAYENDRA RAO
VIRABHADRA RAO
VISHAKANTAIAH
VISHWAMBHARAN
VISWANADHA RAO
VISWANATHAIAH
VISWANATHARAI
VISWESWARA RAO

WASEEMUL ISLAM

YOGNANARAYANA
YOUSUF ALI KHAN

14 lettered names

ANANDAKRISHNAN
ANANTAKRISHNAN
ANANTHAKRISHNA
ANANTHALAKSHMI
ANANTHANARAYNA
ANANTHARAMAIAH
ANANTHASAYANAM
ANANTNARAYANAN
ANATHANARAYANA
ANATHARATNARAM
ANJANEYAPRASAD
ANJANEYASASTRY
ANNTHACHARYULU
APPALACHARYULU
APPALANARASIAH
ATCHUTHANKUTTY

BADARINARAYANA
BADRINARAYANAN
BALAKRISHNAIAH
BALAKRISHNA RAO
BALA SUBRAMANYA
BANDYOPADHYAYA
BHAGIRATH SINGH
BHATTACHARYULU

BHATTATHIRIPAD
BRAHMANANDARAO
BUTCHESWAPA RAO

CHANDERSEKARAN
CHANDRAKEERTHI
CHANDRASEKARAN
CHANDRASEKHARA
CHATTOPADHYAYA
CHENNAKESAVALU
CHENNAVEERAIAH
CHIKKAGUDDAPPA

DAKSHINAMURTHI
DAKSHINAMURTHY
DATTACHAUDHURI
DATTACHOUDHURY
DEVAPRABHAKARA
DEVASANKARAIAH
DHANAPALANMOSI
DHARMARAJAIYER
DUTTACHAUDHURI
DUTTACHAUDHURY
DUTTACHOUDHURI
DUTTACHOWDHURY

FALCAODEMORAIS

GAJENDRAGADKAR
GANESHSUNDARAM
GANGAPRASAD RAO
GEORGEVARGHESE
GHOSHCHAUDHURY
GOPALAKRISHNAN
GOPINADHPILLAI
GOPINATHANNAIR

HANUMANTHREDDY
HARIPRASADA RAO
HIRIYAKKANAVAR

INDUDHARASWAMY
JAGADEESHKUMAR
JAGADISWARARAO
JAGANMOHANARAO
JAGANNADHARAJU
JITHENDRAKUMAR
JOSEPHBAGYARAJ

KALYAN SUNDARAM
KAMASUNDARARAO
KAMESWARASARMA
KANAKADURGAMBA
KANAKARAJDAVID
KHURSHEEDAHMED
KISHINCHANDANI
KOLAPPANPILLAI
KRIPANARAYANAN
KRISHNAIYENGAR
KRISHNAMACHARI
KRISHNAMOORTHI
KRISHNAMOORTHY
KRISHNAPRAKASH

KRISHNASAMY RAO
KUNJAMMAHRISHI

LAHIRIMAJUMDER
LAKSHMANACHARY
LAKSHMANANAIDU
LAKSHMIKANTHAM
LAKSHMIKANTHAN
LAKSHMINARAYAN
LAXMINARAYANAN

MADALAGATTI RAO
MADHAVANPILLAI
MADHUSUDANA RAO
MALAKANDAREDDY
MALAKONDAREDDY
MANGESHWARARAO
MANIBHUSHANRAO
MANICKAVASAGAM
MATHINULLAKHAN
MOHAMEDALIKHAN
MOHAMEDSHERIFF
MOHANAKRISHNAN
MOHANDASANNAIR
MOOKHOPADHYAYA
MUNASWAMY NAIDU
MURALIDHARARAO
MURALIMOHANRAO
MUTHUKKARAPPAN
MUTHUKKARUPPAN
MUTHUKRISHNIAH
MUTHUVEERAPPAN

NAGABHUSHANIAH
NAGARAJASHARMA
NAMBINARAYANAN
NAMPERUMALSAMY
NARASIMHACHARI
NARASIMHAMURTY
NARASIMHAREDDY
NARASIMHASWAMY
NARAYANAMURTHY
NARAYANANKUTTY
NARAYANAYENGAR
NARAYANKHEDKAR
NARAYANAMURTHI
NARAYANAMURTHY
NARAYANANKUTTY
KARAYANANPOTTY
NARAYANAPILLAI
NARAYANAPRASAD
NARAYANASASTRY
NEDUNCHELLIYAN

PADMANABHAIYER
PADMINIAGARWAL
PAKKIRMOHAMMED
PANCHAKSHARIAH
PARAMASHIVAIAH
PARAMESWARAIAH
PARAMESWARARAO
PARAMESWARIAHR
PARATHASARATHY

PARIKHMAHENDRA
PINTODOROSARIO
PRABHAKARREDDY
PRABHANJANARAO
PURSHOWTHAMRAO

RADHAKRISHNANI
RADHAKRISHNIAH
RAGHABENDRARAO
RAGHAVENDERRAO
RAGHAVENDRARAO
RAGHURAMAREDDY
RAJARAMALINGAM
RAJASEKHARARAO
RAJASHEKARAIAH
RAJASHEKARAIYA
RAJASHEKARAPPA
RAMABHADRARAJU
RAMACHANDRAIAH
RAMACHANDRARAO
RAMACHANDRAROW
RAMAKRISHNAIAH
RAMAKRISHNARAO
RAMALINGA REDDY
RAMALINGASWAMI
RAMALINGASWAMY
RAMANATHAMENON
RAMANATHANIYER
RAMASUBBAREDDY
RAMESHWARREDDY
RANGANAYAKAMMA
RANGHUNATHARAO
RASHEEDUZZAFAR
RAVINDRANATHAN
RAVIVARMAHEDGE

SACHCHIDANANDA
SAFFARULLAKHAN
SAHATAHABILDAR
SALIMRAJAZAIDI
SAMBOORNARAMAN
SAMPATHIIYENGAR
SAMPATHKUMARAN
SANKARSRINIVAS
SARAMMAABRAHAM
SARASNATHYAMMA
SARASWATHYDEVI
SARMMAABRAHAM
SATAYANARAYANA
SATCHIDANANDAM
SATHYANARAYANA
SATYANARAYANAN
SCHLAGENHAUFF
SEETHALAKSHMY
SEETHAPATHIRAO
SEETHARAMAIAH
SELVANARAYANAN
SESHADRINATHAN
SHADAKSHARAPPA
SHANKARACHARYA
SHANKARA SASTRY
SHANKARNARYANA
SHANMUGANATHAN

SHANMUKHESWARA
SHARATHCHANDRA
SHENEGAMOORTHY
SHESHANARAYANA
SHIVAPPASHETTY
SINHAMAHAPATRA
SITARAMASASTRY
SIVAKUMARSWAMY
SIVANKUTTYNAIR
SIVAPRASADA RAO
SIVARAMASASTRY
SIVASANKARARAO
SOMASUNDARARAO
SOUNDRANAYAGAM
SOUNDRAPANDIAN
SREEDHARAMURTY
SREEDHARASWAMY
SREENIVASABABU
SREERAMAMURTHY
SREERANGASWAMY
SRIKANTAMURTHY
SRIMANNARAYANA
SRINIVASACHARI
SRINIVASAGOWDA
SRINIVASAMURTY
SRIPATHYPRASAD
SRIRAMACHANDRA
SRIRAMAKRISHNA
SUBBARAMIREDDI
SUBHADRAKUMARI
SUDARSHANARAJU
SUDHAKARAREDDY
SUGUNAKARREDDY
SUNDARAMOORTHY
SUNDARAMMURTHY
SUNDARARAMAIAH
SUNDARASIVARAO
SUNDARAVADANAN
SURAYANANAYANA
SURENDRANATHAN
SURROYCHOWDHURY
SURYANARAYANAN

THIAGASUNDARAM
THILLAINAYAGAM
THIPPERUDRAIAH
THOLAMANIDEVAR

VAIDHIYANATHAN
VARAPRASADA RAO
VASANTHASHETTY
VASUDEVAMURTHY
VEDANTADESIKAN
VEERABHADRAPPA
VEERABHADRARAO
VENKATAPPARAO
VENKATARAMAIAH
VENKATARAMANAN
VENKATASUBBRAO
VENKATAVARADAN
VENKATESHWARLU
VENKATESWAR RAO
VENKATNARAYANA

VENKATRAMARAJU
VENKETARAMAIAH
VENKITESHWARAN
VIDHYASEKHARAN
VIJAYACHANDRAN
VIJAYARAGHAVAN
VIJAYALAKSHIMI
VIJAYARAGOAVAN
VIJAYATHILAKAN
VIRABHADRARAO
VISVANATHANRAO
VISWANATHSARMA
VYAGHRESWARUDU

YOGANARASIMHAN

15 lettered names

ACHYUTARAOBAPAT
ADITYACHAUDHURY
ALIULHASANRIZVI
ANANDAVALLYAMMA
ANANTHACHARYULU
ANANTHAKRISHNAN
ANANTHANARAYANA
ASWATHANARAYANA
ATCHYUTARAMAYYA

BALAGANGADHARAN
BALAJAGANNATHAN
BALAPARAMESWARA
BALASUBRAMANIAM
BALASUBRAMANIAN
BALASUBRAMANIOM
BALASUBRAMANIUM
BALASUBRAMANYAM
BALASUBRAMANYAN
BHAKTAVATSALRAO
BHAKTHAVATHSALU
BHASKARAZAREDDY
BHATNAGARTHOMAS
BHAVANISANKARAN
BINDUMADHAVARAO
BRAHMAKSHATRIYA
BRAHMAYYASASTRY

CHAKRAPANINAIDU
CHANDRAKANTARAO
CHANDRAMOLESWAR
CHANDRASHEKHARA
CHANDRASEKHARAM
CHANDRASEKHARAN
CHANDRSEKHARIAH
CHANDRAVADIVELU
CHANNABASAVAIAH
CHANNABASAVANNA
CHICKAVEERACHAR

DAHILSUNDARARAJ
DESHMUKHINAMDAR
DEVARAJULUNAIDU
DHAKSHINAMURTHY
DURGAPRASADARAO

GANGADHARANNAIR
GANGAPRASADARAO
GIRIJAVALIABHAN
GIRIJAVALLABHAN
GOPINADHAPILLAI
GOPINATHANNAYAR
GOWRINATHSASTRY

HANUMANTHACHARI
HARIHARBHARGAVA
HARIHARKRISHNAN
HEMALATHAISAIAH

JAGADISHCHANDRA
JAGANNADHASARMA
JANARDHANAREDDY
JAYAMOHANPILLAI
JAYANARA SIMHULU
JAYARAMANPILLAI
JEEVANANDA REDDY
JOHN CHRISTOPHER

KALYANASUNDARAM
KAMALAKSHINAYAK
KAMESWARASARMAA
KAMESWARA SASTRI
KANAGASABAPATHY
KARUNAKARANNAIR
KASHVISWANATHAN
KRISHNABHARGAVA
KRISHNAMACHARLU
KRISHNAMOHANRAO
KUNCHITHAPATHAM

LAKSHMANAMURTHY
LAKSHMINARAYANA

MADHAVANNAMBIAR
MAHADEVANPILLAI
MAHALINGESHWARA
MALLIKARJUNARAO
MARGARETTHERESA
MOHANMADHYASTHA
MOUTSCHENDAHMEN
MRUTHYUNJAYANNA
MURUGARAJENDRAN

NAGABASAVASETTY
NAGASUBRAMANIAN
NARASIMHAMURTHI
NARASIMHAMURTHY
NARAYANAIYENGAR
NARAYANAMOORTHY
NEELAKANTASWAMY

PADMANABHAMURTY
PADMANABHASARMA
PADMANABHASETTY
PANCHAKSHARAPPA
PARAMESHWARAPPA
POONNOOSEMATHEW
PRABHAKARANAIDU
PRABHAKARANNAIR
PRABHAKARAREDDY

PRABHUAJGAONKAR
PRAFULLACHANDRA
PRASANTHAMURTHY
PUNDARIKAKSHUDU
PURNACHANDERRAO
PURNACHANDRARAO
PURNAPRAGNACHAR

RADHAKRISHNAIAH
RADHAKRISHNARAO
RAGHAVACHARYULU
RAGHAVANNAMBIAR
RAGHAVENDRABABU
RAGHAVENDERARAO
RAGHUNATHAREDDY
RAJAGOPALAREDDY
RAJASEKARASETTY
RAJASHEKHARAIAH
RAMAKRISHNAIYER
RAMALINGASASTRY
RAMAMOHANPRASAD
RAMANATHA CHETTY
RAMANATHAPILLAI
RAMASUBRAMANIAM
RAMASUBRAMANIAN
RAMASUBRAMONIAN
RANGANADHASWAMY
RANGANATHASWAMY
REMASUBRAMANYAM

SAMBASIVASASTRY
SANTHANAGOPALAN
SAROJAVENUGOPAL
SATHYANARAYANAN
SATHYAVATHIAMMA
SATYASUBRAMANYA
SAVITHRISUKUMAR
SEETHAMANOHARAM
SEETHARAMAREDDY
SEETHARAMASWAMY
SHANKARNARAYANA
SHANMUGAMPILLAI
SHANMUGANATHANS
SHANMUGHANATHAN
SITARAMAIYENGAR
SIVAKAMASUNDARI
SIVARAMAKRISHNA
SIVASITHAMPARAM
SIVASUBRAMANIAM
SIVASUBRAMANIAN
SOUNDARAPANDIAN
SREEDHARAMURTHY
SREEKANTARADHYA
SREEMANNARAYANA
SREENIVASAMURTY
SREERAMAKRISHNA
SRENVASAIYENGAR
SRIDHARARAMARAO
SRINIVASACHARLU
SRINIVASACHARYA
SRINIVASAMURTHY
STEPHENDORAIRAJ
SUBRAMANIAAYYAR

SUBRAMANYAMRAJU
SUDHAKARANMENON
SUKUMARSAVITHRI
SUNDARARAGHAVAN
SURENDRANATHAN
SURROYCHOUDHURI
SURROYCHOUDHURY
SURROYCHOWDHURY
SURYAKANTHARAJU
SURYAPRAKASA RAO
SURYAPRAKASH RAO
SWAMYNATHAREDDY
SYAMSUNDARARAO

THIRUNAVUKARASU
THOMASALEXANDER
TIRUNAVUKKARASU
TIRUVENGANNARAO

UDAYASEKHARARAO
UDAYASHANKARRAO
UMAMAHESWARARAO

VAIDYANATHAIYER
VARISAIMUHAMMAD
VEDAVYASAMURTHY
VELAYUDHANNAYAR
VELUMURUGENDRAN
VENKATACHALAPPA
VENKATACHARYULU
VENKATAKRISHNAN
VENKATANARAYANA
VENKATARAGHAVAN
VENKATARAMARAJU
VENKATASESHAIAH
VENKATASUBBARAO
VENKATASUBRAIAH
VENKATESHMURTHY
VENKATESHWARALU
VENKATESWARARAO
VENUGOPALACHARI
VIJAYALAKSHAMMA
VIRABHADRACHARI
VISWESWARAGOWDA

ZAKIUDDINCHISTY

16 lettered names

ADINARAYANAREDDY
AGNESMADHURAVANI
ALAGIANAGALINGAM
ANANTHANARAYANAN
APPALANARASIMHAM
BALA CHANDRA NAIDU
BALAKRISHNA NAIDU
BALAKRISHNAN NAIR
BALASUBRAHMANYAM
BALASUBRAH MANYAN
BALASUBRAMANIYAM
BHASKARANARAYANA
BHASKARAN NAMBIAR
BHAVANISANKAR RAO

BOSE ROY CHOUDHURI
BOSE ROY CHOUDHURY

CHAKRAPANI SASTRY
CHANDRA CHOWDHURY
CHANDRASEKHARAN
CHANDRASEKHARIAH

DANIEL SUNDARARAJ
DATTATREYA SASTRY
DEIVEEKASUNDARAM
DWARAKANATH REDDY

GANGADHARA SHARMA
GOPALA KRISHNA RAO
GOPALA KRISHNAYYA

HARIHARA KRISHNAN

JAMESCHRISTOPHER
JANARDHANA CHETTY

KARIVARATHARAJAN
KRISHNA MOHANA RAO
KRISHNA MURTHY RAO
KRISHNANNAMBISAN
KUHLMANN WILSDORF
KUMAR SWARNANANDA

LAKSHMANAPERUMAL
LAKSHMINARASIMHA
LAKSHIMI NARAYANA
LAKSHMI NARAYANAN
LALITHAMBIKA DEVI
LAXMINARAYANA RAO

MADHUSUDANAN NAIR
MALLIKHARJUNA RAO
MUTHUKUMARASWAMY
MUTHUSUBRAMANIAN

NAGA BHUSANA REDDY
NARA SIMHARA REDDY

PADMANABHA MURTHY
PARAMESWARAAYYAR
PARAMESWARANNAIR
PARVATHESWARA RAO
POORNACHANDRA RAO
PRABHAKARAMURTHY
PRABHAKARAN NAYAR
PRABHAKARA RATNAM
PRASANNA SIMHA RAO

RAJASEKHARAN NAIR
RAMACHANDRAAYYAR
RAMA CHANDRACHARI
RAMACHANDRA KURUP
RAMACHANDRA MURTY
RAMACHANDRANIYER
RAMACHANDRAN NAIR
RAMACHANDRA REDDY
RAMAKRISHNA KURUP

RAMAKRISHNAN NAIR
RAMAKRISHNAN RAJU
RAMAKRISHNA REDDY
RAMAKRISHNA UDUPA
RAMANUJACHARYULU
RAVEENDRANPILLAI
ROYAN SUBRAMANIAM

SAMBAMURTHY REDDY
SAMPATH NARAYANAN
SAMUEL SUNDARARAJ
SANKARANARAYANAN
SANTHANAKRISHNAN
SATHYABHAMA REDDY
SATYANARAYANA RAO
SHADAKSHARASWAMY
SHAMIM JAIRAJPURI
SHANKARANARAYANA
SHANMUGASUNDARAM
SHESHAGIRIHEBBAR
SHIVALINGARADHYA
SITHAMAHALAKSHMI
SIVARAMAKRISHNAN
SOMASEKHARAN NAIR
SOMASEKHARA REDDY
SREEDHARAN PILLAI
SREENIVASAMURTHY
SRINIVASA MOORTHY
SRIVEERA RAGHAVAN
SUBRAHMANIAAYYAR
SUBRAHMANYASARMA
SUBRAMANYAM REDDY
SUBRAMONIAPILLAI
SUNDARARAMA REDDY
SURYANARAYANA RAO
SUSANNAVARATHNAM
SYAMALABHASKARAN

THIRUVENGADATHAN

UNNIKRISHNAN NAIR

VAIDYANATHASWAMY
VASANTHARAJ DAVID
VASUDEVA DEVADIGA
VENKATACHALAPATI
VENKATA KRISHNIAH
VENKATA RAMANAIAH
VENKATARAMANA RAO
VENKATA RAMANUJAM
VENKATARAMIREDDY
VENKATA RAYACHARI
VENKATESHWARA RAO
VENKATNARSA REDDY
VENUGOPALA PILLAI
VISHWANATHAREDDY

17 lettered names

ACHARYYACHOUDHURI
ADINARAYANAMURTHY

BANERJEE CHOUDHURY

CHANDRALEKHAPEDDY
CHANDRASEKHARAIAH
CHANDRASEKHARARAO

DHANAMJAYAMOORTHY

GANAPATHYSUNDARAM
GOPALAKRISHNAIYER
GOPALAKRISHNANAIR
GOPALKRISHNAMURTY
GOPLALKRISHNAIYER
GOVINDARAOSINDHIA

JANARDHANNAPILLAI

KANAKALAKSHMINAIR
KANTHIMATHINATHAN
KRISHNAMURTHY BHAT
KULASEKARAPANDIAN
KUMARASWAMYACHARI

KWARISATJADIBRATA

LAKSHMINARASIMHAM
LAKSHMINARASIMHAN

MADHAVAKRISHNAIAH
MANAVALARAMANUJAM
MEENAKSHISUNDARAM
MILLIKARJUNASWAMY
MURALIKRISHNA DASS

NAGABHUSHANASWAMY
NITHYANANDASHENOY

RADAKRISHNAMURTHY
RADHAKRISHNAMURTI
RADHAKRISHNAMURTY
RADHAKRISHNANNAIR
RADHAKRISHNA SETTY
RAJARAMMOHAN REDDY
RAMAKRISHNAPILLAY
RAMAKRISHNASASTRI
RAMAKRISHNA SHARMA
RAMALINGESWARA RAO
RAMANADIKSHITHULU
RASACHANDRAKARIHA
RAVINDRANATHGUPTA

SADAGOPARAMANUJAM
SANKARSHANAMURTHY
SAROJINIDAMODARAN
SATHIABALANSAMUEL
SATHYANARAYANA RAO
SEETHARAMAACHARYA
SETHUMADHAVA MENON
SETHURAMACHANDRAN
SHANKARANARAYANAN

SHIVARAMAKRISHNAN
SREENIVASAMOORTHY
SREENIVASULU REDDY
SRINIVASARAGHAVAN

SUBRAHMANYAMNAIDU
SUBRAHMANYA SASTRI
SUNDARARAJIYENGAR
SURENDRANATHREDDY
SYAMASUNDARAMURTY

TASADDOGUEHUSSAIN
THIRUCHITRAMBALAM

UNNIKRISHNANNAYAR

VANZINDERENBAKKER
VARADARAJAIYENGAR
VEERABASAPPAGOWDA
VEERARAGHAVACHARY
VENKATACHALAPATHY
VENKATANARASIMHAN
VENKATARAMANABHAT
VENKATARAMANARAJU
VENKATESWARAREDDY
VEKITASUBRAMANIAN
VIJAYAKRISHNANAIR

18 lettered names

ANANTHAPADMANABHAN
ANANTHASUBRAMANIAM

BALAPARAMESWARA RAO
BALASSOUBRAMANIANE

CHANDRASEKARAN NAIR

GOPALAKRISHNAMURTY

KRISHNAMOORTHY BHAT
KUNJUKRISHNAPILLAI

LAKSHIMINARASIMHAN

MALLIKHARJUNASWAMY
MEENAKASHISUNDARAM
MURALEEDHARAN NAYAR

NAVANEETHAKRISHNAN

PADMANABHAN NAMBIAR
PARAMESWARANPILLAI
PARTHASARATHY REDDY

RADHAKRISHNA MURTHI
RADHAKRISHNAMURTHY
RADHAKRISHNA PILLAY
RAJENDRANATHAN NAIR
RAMAKRISHANIYENGAR
RAMAKRISHNAIYENGAR
RANGANATHACHARYULU
RANGASWAMIAYYANGAR
RAVINDRANATHA MENON
RAYINDRANATHA MENON

SANKARANARAYANA RAO
SANKARASUBRAMANIAN
SATYANARAYANA MURTY
SATYANARAYANA REDDI
SIVARAMAKRISHNAIAH
SRINIVASARAMANUJAM
SUBRAMANYESWARA RAO
SUNDARARAJAIYENGAR
SURYANARAYANA MURTY

THILLAICHIDAMBARAM

UMAMAHESWARA PRASAD

VASANTHKUMAR SHETTY
VEERANARAYANA GOWDA
VENKATACHALAMREDDY
VENKATA CHALAMURTHY
VENKATASUBRAMANIAN

VENKITA KRISHNAIYER
VENKITASUBRAMANIAN
VENUGOPALANNAMBIAR

19 lettered names

AHAMEDMOHIDEEN SAHIB
ANANTHAKRISHNANADAR

CHANDRASEKHARAGOWDA
CHANDRASEKHARANNAIR
CHANDRASEKARA PILLAI
CHANDRASEKHARAREDDY
CHATHURBHUJANATHIAH
CHIDAMBARANATARAJAN

GOPALAKRISHNAKAIMAL
GOPALAKRISHNAMURTHY

KADAMBAVANA SUNDARAM

MOHANARADHAKRISHNAN

NARAYANANNAMBOODIRI

RADHAKRISHNIAH SETTY
RAJARAMA MOHANA REDDY
RAMCHANDRATAMHANKAR
RAVINDRANATHANMENON

SATYANARAYANA MURTHY
SETHUPATIRAMALINGAM
SIVAKRISHNAIAH NAIDU
SIVARAMASUBRAMANYAM
SRIRAMACHANDRAMURTY
SURYANARAYANAMURTHY
SURYANARAYANARAJYAM

VENKATAKRISHNABHATT

20 lettered names

BALA GANGADARAMOORTHY

CHANDRASHEKARASHARMA

GANAPATHISUBRAMANIAN
KRISHNAMOORTHYCHETTY
PARVATALINGESWARARAO

PATTABHIRAMACHARYULU

RADHASHNMUGASUNDARAM
RAVINDRANATHANPILLAI

SETHUPATHIRAMALINGAM
SRIRAMACHANDRAMURTHY

THIRUGANANASAMBANDAM

21 lettered names

CHANDRASEKHARANKARTHA

KASTHURITHIRUMALACHAR

RADHASHANMUGASUNDARAM

SANKARASUBRAMONIAIYER
SATYANARAYANACHARYULU
SIVARAMAKRISHNAPRASAD
SUMITRAVIJAYARAGHAVAN

22 lettered names

VENKATAKRISHNAIACHETTY

24 lettered name

GOLLAMUDILAKSHMINARAYANA

SHORT COMMUNICATION

CURRENT PROGRAMS — AN ALERTING SERVICE BASED ON SCIENTIFIC MEETINGS

S N Agarwal
R R Khan

Industrial Toxicology Research Centre
Lucknow-226001

Presentation of scientific papers in meetings or conferences is an effective way of communication among the researchers. Such presentations are more useful than publishing in periodicals as the former not only convey the results quicker than periodicals but also provide a chance for fruitful criticisms. But most of the papers presented at the meetings may go unnoticed since they are rarely abstracted by major abstracting services possibly because of their fugitive nature. The only exception is of those papers which are published in the form of proceedings or those which are published in periodicals at a later date. Still a large percentage of papers presented at meetings is not published anywhere and is therefore lost. This is particularly true of papers on engineering applications.

Considering the facts that (i) meeting papers are at least as valuable as those published in journals [1], (ii) meeting papers are presented on an average of one year before journal publication [2], and (iii) the first coordinated presentation of a new research direction is almost always made at a meeting, it is absolutely clear that meetings are extremely-important for dissemination of current information.

A researcher also knows that the utility of scientific information diminishes with time. The most valuable information is that which can be obtained quickly enough to enable one to correspond with the auther while the material is still fresh in his mind. In this sense, the information presented at a meeting will be available sooner and would be more valuable than its published version in a journal. In spite of this, this information source has been poorly exploited.

AVAILABLE SERVICES

The proposed meetings are usually announced by sponsors through relevant periodicals corresponding to the scope of a meeting. Special pamphlets are also issued for the purpose of publicity. Meetings are also announced through some periodicals exclusively published for this purpose. One such publication is the Scientific Meetings , a a quarterly publication of the Special Libraries Association, USA. Started in the year 1957, it reports future meetings of technical, scientific, medical and management organisations and universities. Besides this, World Meeting Information Centre, USA also brings out two quarterly publications viz. World Meetings: United States and Canada and World Meetings: Outside United States and Canada announcing meetings respectively from inside USA and Canada and from outside USA and Canada.

Current Programs

However, none of the above mentioned services give the details of the papers presented in the various sessions of the meetings. The World Meetings Information Centre (WMIC) has started a current awareness service known as Current Programs based on the programmes of scientific and technical meetings. The Centre has been collecting and disseminating information on scientific and technical meetings since 1963. More than 2, 000 organisers of national, regional and international meetings all over the world are contacted regularly. The response is claimed to be over 98 per cent. A data bank is created which has, in the year 1973, covered 3, 669 scientific and technical meetings that took place in 95 different countries. Newly announced meetings are added to the WMIC data bank at a rate of about 200 per month. The coverage of the data bank is reviewed regularly by WMIC Advisory Board.

The Current Programs (CP) is a monthly current awareness service and is, in effect, a mirror of the ongoing research and development available a year before it is published in any form. For the most part, the information included in CP is taken from the final programmes or abstract publications of the meetings augmented by responses to questionnaires. On an average, each year CP publishes the titles of about 120, 000 scientific and technical papers presented at about 1200 significant meetings held throughout the world.

SUBJECT COVERAGE

The publication covers all areas of life science and medicine, chemistry, physical sciences and geosciences and also engineering. Such a comprehensive and unified format of CP is designed to take advantage of the richness and flexibility of meetings. Moreover due to the inherently strong interdisciplinary orientation of meetings, inclusion of all the fields within a single set of covers is a virtual necessity. With the help of cross references, various interdisciplinary meetings are correlated. CP is divided into 24 sections. Seven of the sections are of direct interest to life scientist, eight are of direct interest to workers in the field of chemistry, physical sciences and geosciences. Nine are of direct interest to engineers Each of the sections contains the scientific programmes for each meeting directly concerning the field covered plus cross references to meetings of interdisciplinary interest appearing in other sections.

The information covered under each meeting is as follows: (i) the full title of the meeting preceded by the registry number assigned to it by the WMIC; (ii) the inclusive dates of the meeting; (iii) the venue of the meeting; (iv) names of all the sponsoring organisations; (v) ordering information for publication; and (vi) a list of papers presented.

Papers are presented in the order in which they appear in the programme. For each paper, the following information is given: (i) the name and, to the degree available, the mailing address of the first author: (ii) the complete title of the paper: and (iii) any ordering number assigned to the paper in the printed programme of the conference. Each paper is preceded by a six digit serial number. This number is assigned sequentially for the full volume year and is used as the index reference for the quarterly and annual indices to the CP.

INDICES

The Indices, published quarterly and annually give the user a retrospective search capability. Four indices under one cover are issued separately: (i) Subject Index: (ii) Author Index: (iii) Index by Date of Meeting: and (iv) Index by World Meetings Registry Number. The papers listed in CP are serially numbered throughout the volume year. These indices refer to the individual papers with the help of six digited number assigned to each paper.

Subject Index: Each title listed in CP is indexed under an average of five subject headings chosen by computer. The entries under a given subject heading are arranged alphabetically by a secondary word, which may be the word immediately preceding or immediately following the subject word in the title. The subject words and secondary words are printed in bold face to facilitate rapid scanning. As much of the title as possible is included within the width of a single column.

Author Index: The author for each paper is mentioned alphabetically in the Author Index.

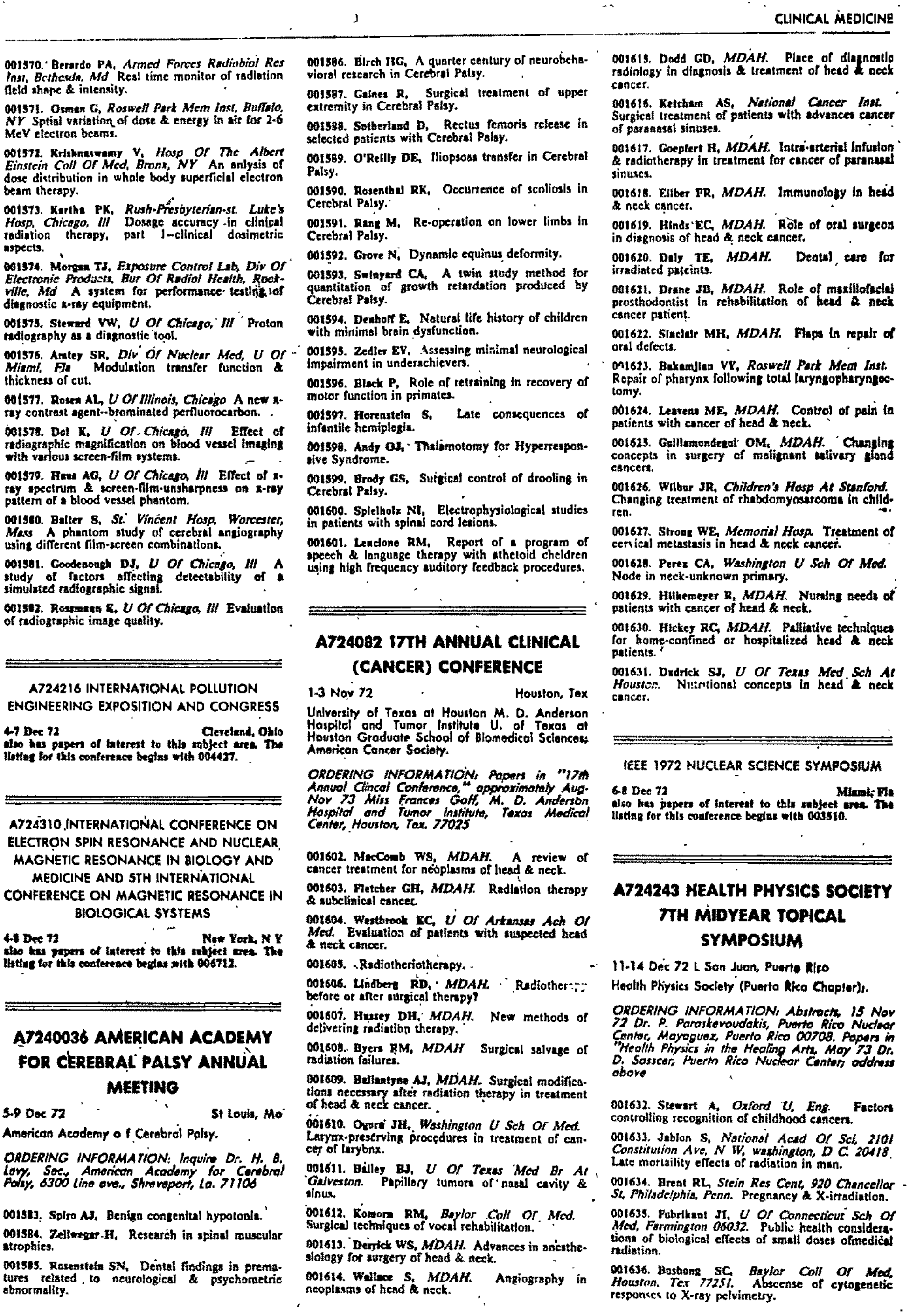
Index by Date of Meeting: The Index by date of meeting includes the starting date of the meeting, the subject of the meeting, the name of the place where the meeting took place and to direct the user to the programme he needs, the serial number of the first paper listed for the meeting.

Index by World Meeting Registry Number: This Index is included to enable the users of World Meetings: United States and Canada and World Meetings: Outside United States and Canada to search CP for specific meetings which are listed in these two publications. The registry numbers are assigned to meetings as they are entered into the WMIC data bank and are used for indexing in the two above-mentioned journals. Access to CP is provided by giving the CP serial number of the first papers listed for each meeting.

REFERENCES

[1] A comparison of the utility of information contained in copies of papers presented at the October 1966 Meeting of the Optical Society of America with journal articles based on the same material. Johns Hopkins University Centre for Research in Scientific Communication. Technical Note No. 11, February, 1969.

[2] Reports of studies of the publication fate of Material presented at national Meetings (two years after the meetings), Johns Hopkins University Centre for Research in Scientific Communication, June 1969, National Technical Information Service No. PB 185469.



CLINICAL MEDICINE

001570. **Berardo PA,** *Armed Forces Radiobiol Res Inst, Bethesda, Md* Real time monitor of radiation field shape & intensity.

001571. **Osman G,** *Roswell Park Mem Inst, Buffalo, NY* Sptial variation of dose & energy in air for 2-6 MeV electron beams.

001572. **Krishnaswamy V,** *Hosp Of The Albert Einstein Coll Of Med, Bronx, NY* An anlysis of dose distribution in whole body superficial electron beam therapy.

001573. **Kartha PK,** *Rush-Presbyterian-st. Luke's Hosp, Chicago, Ill* Dosage accuracy in clinical radiation therapy, part 1--clinical dosimetric aspects.

001574. **Morgan TJ,** *Exposure Control Lab, Div Of Electronic Products, Bur Of Radiol Health, Rockville, Md* A system for performance testing of diagnostic x-ray equipment.

001575. **Steward VW,** *U Of Chicago, Ill* Proton radiography as a diagnostic tool.

001576. **Amtey SR,** *Div Of Nuclear Med, U Of Miami, Fla* Modulation transfer function & thickness of cut.

001577. **Rosen AL,** *U Of Illinois, Chicago* A new x-ray contrast agent--brominated perfluorocarbon.

001578. **Doi K,** *U Of Chicago, Ill* Effect of radiographic magnification on blood vessel imaging with various screen-film systems.

001579. **Haus AG,** *U Of Chicago, Ill* Effect of x-ray spectrum & screen-film-unsharpness on x-ray pattern of a blood vessel phantom.

001580. **Balter S,** *St. Vincent Hosp, Worcester, Mass* A phantom study of cerebral angiography using different film-screen combinations.

001581. **Goodenough DJ,** *U Of Chicago, Ill* A study of factors affecting detectability of a simulated radiographic signal.

001582. **Rossmann K,** *U Of Chicago, Ill* Evaluation of radiographic image quality.

A724216 INTERNATIONAL POLLUTION ENGINEERING EXPOSITION AND CONGRESS

4-7 Dec 72 **Cleveland, Ohio**
also has papers of interest to this subject area. The listing for this conference begins with 004427.

A724310 INTERNATIONAL CONFERENCE ON ELECTRON SPIN RESONANCE AND NUCLEAR MAGNETIC RESONANCE IN BIOLOGY AND MEDICINE AND 5TH INTERNATIONAL CONFERENCE ON MAGNETIC RESONANCE IN BIOLOGICAL SYSTEMS

4-8 Dec 72 **New York, N Y**
also has papers of interest to this subject area. The listing for this conference begins with 006712.

A7240036 AMERICAN ACADEMY FOR CEREBRAL PALSY ANNUAL MEETING

5-9 Dec 72 St Louis, Mo

American Academy o f Cerebral Palsy.

ORDERING INFORMATION: Inquire Dr. H. B. Levy, Sec., American Academy for Cerebral Palsy, 6300 Line ave., Shreveport, La. 71106

001583. **Spiro AJ,** Benign congenital hypotonia.

001584. **Zellweger H,** Research in spinal muscular atrophies.

001585. **Rosenstein SN,** Dental findings in prematures related to neurological & psychometric abnormality.

001586. **Birch HG,** A quarter century of neurobehavioral research in Cerebral Palsy.

001587. **Gaines R,** Surgical treatment of upper extremity in Cerebral Palsy.

001588. **Sutherland D,** Rectus femoris release in selected patients with Cerebral Palsy.

001589. **O'Reilly DE,** Iliopsoas transfer in Cerebral Palsy.

001590. **Rosenthal RK,** Occurrence of scoliosis in Cerebral Palsy.

001591. **Rang M,** Re-operation on lower limbs in Cerebral Palsy.

001592. **Grove N,** Dynamic equinus deformity.

001593. **Swinyard CA,** A twin study method for quantitation of growth retardation produced by Cerebral Palsy.

001594. **Denhoff E,** Natural life history of children with minimal brain dysfunction.

001595. **Zedler EV,** Assessing minimal neurological impairment in underachievers.

001596. **Black P,** Role of retraining in recovery of motor function in primates.

001597. **Horenstein S,** Late consequences of infantile hemiplegia.

001598. **Andy OJ,** Thalamotomy for Hyperresponsive Syndrome.

001599. **Brody GS,** Surgical control of drooling in Cerebral Palsy.

001600. **Spielholz NI,** Electrophysiological studies in patients with spinal cord lesions.

001601. **Lencione RM,** Report of a program of speech & language therapy with athetoid cheldren using high frequency auditory feedback procedures.

A724082 17TH ANNUAL CLINICAL (CANCER) CONFERENCE

1-3 Nov 72 Houston, Tex

University of Texas at Houston M. D. Anderson Hospital and Tumor Institute U. of Texas at Houston Graduate School of Biomedical Sciences; American Cancer Society.

ORDERING INFORMATION: Papers in "17th Annual Clincal Conference," approximately Aug-Nov 73 Miss Frances Goff, M. D. Anderson Hospital and Tumor Institute, Texas Medical Center, Houston, Tex. 77025

001602. **MacComb WS,** *MDAH.* A review of cancer treatment for neoplasms of head & neck.

001603. **Fletcher GH,** *MDAH.* Radiation therapy & subclinical cancer.

001604. **Westbrook KC,** *U Of Arkansas Ach Of Med.* Evaluation of patients with suspected head & neck cancer.

001605. Radiotheriotherapy.

001606. **Lindberg RD,** *MDAH.* Radiotherapy before or after surgical therapy?

001607. **Hussey DH,** *MDAH.* New methods of delivering radiation therapy.

001608. **Byers RM,** *MDAH* Surgical salvage of radiation failures.

001609. **Ballantyne AJ,** *MDAH.* Surgical modifications necessary after radiation therapy in treatment of head & neck cancer.

001610. **Ogura JH,** *Washington U Sch Of Med.* Larynx-preserving procedures in treatment of cancer of larybnx.

001611. **Bailey BJ,** *U Of Texas Med Br At Galveston.* Papillary tumors of nasal cavity & sinus.

001612. **Komorn RM,** *Baylor Coll Of Med.* Surgical techniques of vocal rehabilitation.

001613. **Derrick WS,** *MDAH.* Advances in anesthesiology for surgery of head & neck.

001614. **Wallace S,** *MDAH.* Angiography in neoplasms of head & neck.

001615. **Dodd GD,** *MDAH.* Place of diagnostic radiology in diagnosis & treatment of head & neck cancer.

001616. **Ketcham AS,** *National Cancer Inst.* Surgical treatment of patients with advances cancer of paranasal sinuses.

001617. **Goepfert H,** *MDAH.* Intra-arterial infusion & radiotherapy in treatment for cancer of paranasal sinuses.

001618. **Eilber FR,** *MDAH.* Immunology in head & neck cancer.

001619. **Hinds EC,** *MDAH.* Role of oral surgeon in diagnosis of head & neck cancer.

001620. **Daly TE,** *MDAH.* Dental care for irradiated pateints.

001621. **Drane JB,** *MDAH.* Role of maxillofacial prosthodontist in rehabilitation of head & neck cancer patient.

001622. **Sinclair MH,** *MDAH.* Flaps in repair of oral defects.

001623. **Bakamjian VY,** *Roswell Park Mem Inst.* Repair of pharynx following total laryngopharyngectomy.

001624. **Leavens ME,** *MDAH.* Control of pain in patients with cancer of head & neck.

001625. **Guillamondegui OM,** *MDAH.* Changing concepts in surgery of malignant salivary gland cancers.

001626. **Wilbur JR,** *Children's Hosp At Stanford.* Changing treatment of rhabdomyosarcoma in children.

001627. **Strong WE,** *Memorial Hosp.* Treatment of cervical metastasis in head & neck cancer.

001628. **Perez CA,** *Washington U Sch Of Med.* Node in neck-unknown primary.

001629. **Hilkemeyer R,** *MDAH.* Nursing needs of patients with cancer of head & neck.

001630. **Hickey RC,** *MDAH.* Palliative techniques for home-confined or hospitalized head & neck patients.

001631. **Dudrick SJ,** *U Of Texas Med Sch At Houston.* Nutritional concepts in head & neck cancer.

IEEE 1972 NUCLEAR SCIENCE SYMPOSIUM

6-8 Dec 72 **Miami, Fla**
also has papers of interest to this subject area. The listing for this conference begins with 003510.

A724243 HEALTH PHYSICS SOCIETY 7TH MIDYEAR TOPICAL SYMPOSIUM

11-14 Dec 72 L San Juan, Puerto Rico

Health Physics Society (Puerto Rico Chapter).

ORDERING INFORMATION: Abstracts, 15 Nov 72 Dr. P. Paraskevoudakis, Puerto Rico Nuclear Center, Mayaguez, Puerto Rico 00708. Papers in "Health Physics in the Healing Arts, May 73 Dr. D. Sasscer, Puerto Rico Nuclear Center, address above

001632. **Stewart A,** *Oxford U, Eng.* Factors controlling recognition of childhood cancers.

001633. **Jablon S,** *National Acad Of Sci, 2101 Constitution Ave, N W, washington, D C 20418.* Late mortaility effects of radiation in man.

001634. **Brent RL,** *Stein Res Cent, 920 Chancellor St, Philadelphia, Penn.* Pregnancy & X-irradiation.

001635. **Fabrikant JI,** *U Of Connecticut Sch Of Med, Farmington 06032.* Public health considerations of biological effects of small doses ofmedical radiation.

001636. **Bushong SC,** *Baylor Coll Of Med, Houston, Tex 77251.* Abscense of cytogenetic responses to X-ray pelvimetry.

Exhibit 1 - A sample page from Current Programs

FOCUS ON UNISIST PROGRAMMES

This is the sixth instalment of this Feature. Report on the Meetings of the Working Group on Bibliographic Data Interchange is being continued from the previous issue.

REPORT ON THE SECOND AND THIRD MEETING OF THE UNISIST WORKING GROUP ON BIBLIOGRAPHIC DATA INTERCHANGE [Continued from the previous issue]

At the third meeting of the Working Group, the Task Group (TG1) study, carried out under a Unesco contract, was presented for discussion. As a result, it was proposed that work be started that will result in a standard towards tagging structure and data field definition. A paper should be prepared outlining the concept of the international macro- and individual network standards. It should attempt to define them and to relate the problem facing those networks and the information community as a whole to the growth problem of information transfer and should identify the basic areas which need investigation. Such a study should also take into account the needs of the library community.

Amongst other matters discussed at the third meeting was a paper presented by the UNISIST Secretariat entitled "A General Concept of a UNISIST-Manual for Information Handling Proceudres". As a result of lengthy discussion, it was suggested that one person or a small task group be set up to study in detail the compilation of the Manual. It was the general feeling however, that the development of this Manual should go hand in hand with the establishment of an International Information Centre on Bibliographic Descriptions which has, as its first main task, to up-date and maintain the UNISIST Reference Manual.

As to the implementation of this project, the Working Group was informed that the German Standards Institute and ISO/TC 46 had already begun work on this matter and had achieved considerable results.

Another Task Group had been set up as a result of the Second Meeting to look at the requirements of different user groups for the extension of current standards to cover additional types of literature. As to a list of priorities, the TG considered the following kinds of literature: maps, translations, audio-visual material, standards, deposited publications, off-prints, reprint productions, technical drawings and computer software. Of these, maps were considered to be of highest priority and it was learnt that IFLA had already created a Working Group especially for maps.

STUDIES UNDER DEVELOPMENT IN THE UNISIST PROGRAMME OF PARTICULAR INTEREST TO DEVELOPING COUNTRIES

The following studies are being developed under contract:

1. Methodology and Evaluation Technique in Training and Education

A formal methodology and evaluation technique will be developed for training courses, workshops and seminars. It will be based on existing national and international guidelines and techniques. This study will contain a review and state-of-the-art of relevant evaluation techniques, provide a bibliography, give a statement of recommended techniques of various types and show samples of questionnaires related to the kind of activities (short courses, long courses, workshops, seminars).

2. Guidelines for Organizing Training and Education Courses and Seminars.

A set of guidelines will be prepared for organizing training courses, seminars, workshops and refresher courses in documentation and information services for practitioners, users and teachers in developing countries. They will cover the planning of training programmes (determination of the need for the course, the objective, the potential audience, sponsorship, teaching site, co-ordination with other educational activities in the country); the preparation of the course (publicity to potential participants, criteria for selection of participants, establishment of a screening committee, accommodation for the programme, the outline of topics and teaching modes); programme activities (language of instruction, reading material for students, etc.) and post-programme activities (evaluation of the programme, follow-up of students, reports, etc.).

3. Guidelines on the Conduct of a National Inventory of Information and Documentation Facilities

These Guidelines will discuss the methodology of inventory taking and suggest the type of facilities to be included or omitted from the survey. The technique of tracing and contacting the selected facilities will be presented in tabular form. Examples of useful by-products which can be generated from the survey will be given as well as the techniques of keeping the inventory up-to-date. A detailed questionnaire for manual and machine processing with extensive coding instructions will be given as an annex.

4. Checklist for the Planning of National Scientific and Technological Information Services and Networks

A detailed checklist in the form of guidelines will be prepared for the planning of national scientific and technological information services and networks. This checklist will cover all factors to be considered by the systems analyst and the systems designer involved in the national planning of scientific and technological information activities. It will cover in detail: operational and managerial parameters of the planned activity; anticipated required systems performance; system-user interaction; present and anticipated activities (infrastructure) and consequent systems design parameters and points to be considered when drawing up policy recommendations and timetables.

5. Guidelines for the Preparation of an Inventory of National Current Research and Development Projects

A small, easy-to-read brochure will be prepared, especially for developing countries, explaining how to prepare a computer-based inventory on national current research and development projects. It will describe how a versatile data base can be constructed from which useful information can be extracted on on-going research, who is who in research and development, interest profiles of scientists, who to invite to different meetings, etc. It will also contain a description of the forms recommended for the provision of the input and a description and demonstration of the various outputs. Block diagrams describing the various administrative and operational steps will be provided. This study will be closely co-ordinated with the preparation of the Unesco Manual for National and International Surveys of Scientific and Technological Potential and Science Statistics.

6. Brochure on National Information Systems

A concise and easy-to-read brochure will be prepared on the essential role of national information systems (NIS) in increasing the application of science and technology to development, based on a critical review of the published literature. The brochure will assist the sponsors, designers and users of national information systems in developing countries to better understand the nature of NIS and the usefulness of formalizing and strengthening them.

7. Brochure on Methods for Evaluating, Consolidating and Repackaging Information

This brochure is concerned with existing methods of evaluation, consolidation and repackaging of information, based on a critical review of available literature in the field. It will in addition include an introductory description of the field, underlining the special needs of developing countries for the repackaged information adapted to their needs. Concrete proposals will be made for more efficient approaches in this area at world, regional and national levels. The brochure will assist sponsors, designers and users of information systems and services in developing countries in the elucidation of the concept.

8. Study on UNISIST Activities in Training and Education

A study is being prepared to serve as a main working document for the first session of the UNISIST Ad Hoc Committee on Education and Training. This study will survey activities carried out within Unesco in the field of education and training of information specialists since 1973, those foreseen in the Draft Programme and Budget for 1975-1976 and the Medium-Term Plan for 1977-1982, as well as relevant activities carried out by other international organizations. Based on this review, proposals will be made concerning activities to be undertaken in the framework of UNISIST presenting a rationale for establishing priorities among various possible projects in the field of education and training of information specialists. The study will be used by the Ad Hoc Committee to propose, to the UNISIST Steering Committee, a policy basis and strategy for the allocation of funds likely to be available in 1977-1982, among a variety of possible types of activities in education and training of information specialists.

9. Feasibility Study on the Establishment of an International Clearinghouse for Training and Education in the Field of Documentation and Information

This study, to be used as a working document at the first session of the UNISIST Ad-Hoc Committee on Education and Training, will be carried out with a view to explore the possibilities of establishing an international clearinghouse or a network of organisms with a clearing function in different regions of the world, which would collect and disseminate up-to-date, evaluated information on who is doing what, when and how in the field of training and education in documentation and information. The study will take into account on-going activities at the national, regional and international levels with special attention to programmes of technical assistance carried out in developing countries; it will include all levels of training and education, consider problems of material and human resources and contain a description of the present state of international co-operation in the field of training and education in documentation and information.

BOOK REVIEW

Using the chemical literature, a practical guide/by Henry M. Woodburn. New York, Marcel Dekkar, 1974. viii, 302p. (Books in library and information science, ed. by Allen Kent, vol. 11).
ISBN 0-8247-6260-6 Pbk $ 14.50
[Reviewed by B Guha]

That the literature of Chemistry has attracted more the attention of librarians, documentalists and users alike is amply indicated by the existence of a number of well prepared guides and other compilations on the use of chemical literature. The present guide is a further indication of this attention and concern. However, this handy guide has some distinctive features of its own which make it an extremely useful compilation.

First of all, the author has been able to provide the most uptodate information. In fact Chemistry can claim many 'firsts' in documentation services and application of documentation techniques and experimentation. As a result the picture is ever-changing . Hence, from time to time, it is necessary to survey the field and present not only a current view of the field but also depict how and when the changes have occurred. As for example, it is said, some of the changes, innovations and experimentations of even the most well known and widely used access tool of Chemistry, viz., the Chemical Abstracts (CA) are not immediately detected or known to many users. Many users of CA are not aware that the present CASSI is a continuation of ACCESS which was again a continuation of the less fashionable title the List of Periodicals Abstracted. Similarly, the difference between the General Subject Index and the Chemical Substance Index of the CA are also not immediately appreciated. This type of practical hints regarding not only the CA but many more tools are available in the publication.

Secondly, the author of this guide has been a teacher of Chemistry for over 50 years. He supervised the research and thesis preparation of a large number of research students and it is from this experience that he became actutely aware of the problems in the use of chemical literature. This rich experience has gone to fill in the three hundred and odd pages of this publication. What is most gratifying is the fact that Professor Woodburn has produced a ~~tr~~ tract which is not only useful to all research students but contains excellent materials for librarians, documentalists, and teachers who have to help research students in their literature searches.

The publication has 17 chapters covering almost every conceivable aspect of the Chemical literature and its use. There are chapters on Nomenclature-structure correlation, collection of physical data, Beilstein's Handbuch der Organischen Chemie, Gmelin's Handbuch der Anorganischen Chemie, Abstracting Services, Scope and use of indexes to Chemical Abstracts, Retrospective searching, Microform publication, Availability of translations, Patent literature, and Computer-readable material. Most of the chapters are very informative and would be extremely useful to research workers, science librarians and information workers alike. Each chapter is supported by a list of very useful references. All these are very appropriately preceeded by a chapter on Library Classification system.

The author has emphasised in the Preface that "the book is a practical guide and not a bibliography of sources ... written from the point of view of the individual rather than that of an institutional literature-searching department, since the author believes that personal literature searching will be needed for a long time." Incidentially , it may be mentioned that the above view on personal literature searching is shared by many scientists of the passing generation in India. Some of them would not believe that the librarian or his staff could help them in this work. But Professor Woodburn has to pass on this piece of advice to young chemists, ... he should establish a good relationship with the science reference librarians. These are almost always highly trained persons, very knowledgable in the area of information sources, and anxious to assist any serious questioner." He says further, "... the chemist should learn something about the organization of material in the library he will use most often." So far as the first suggestion is concerned, it may be said librarians have been given hardly a better credential by a scientists than this. The second suggestion, if followed by all library users will surely help the librarians to provide better service.

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annals of library science and documentation

VOL 22 NO 2 JUNE 1975

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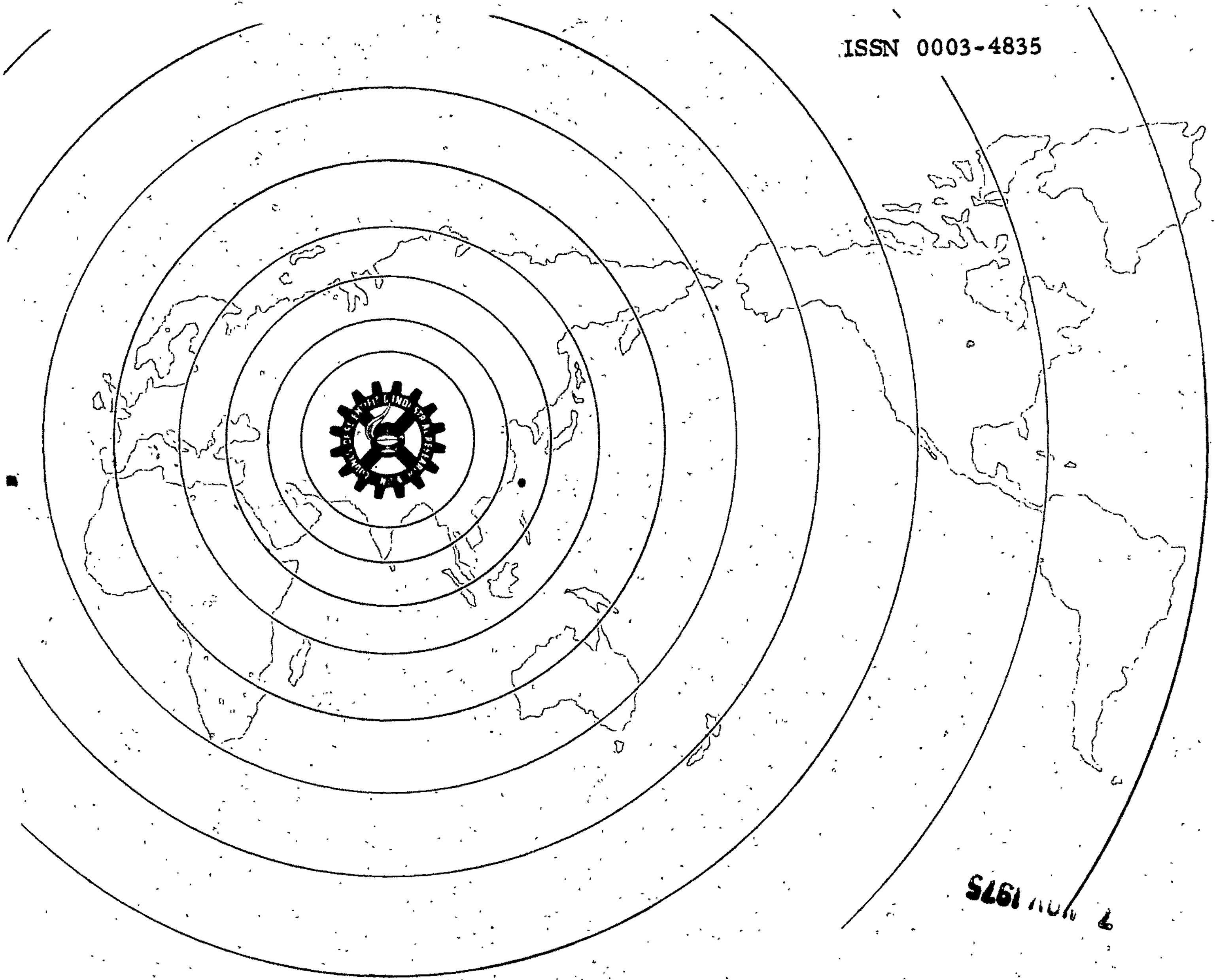
7 NOV 1975

Printed and Published by V. Ramachandran at Insdoc, Hillside Road, Delhi-12

ISSN 0003-4835



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annals of library science and documentation

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VOL 22 NO 3 SEPT 1975

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Annals of Library Science and Documentation is published by INSDOC as a quarterly. The dates of publication are 31 March, 30 June, 30 September, and 31 December.

Annals of Library Science and Documentation is a Medium for publishing original contributions in the field of library classification, cataloguing, bibliographic organisation, documentation techniques, mechanical methods of documentation, bibliographic standardisation, reprographic methods, etc.

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ON THE CHANGE OF TITLES OF PERIODICALS
Part 2

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The second part of the study brings into focus periodicals which have changed titles because of change of name of the sponsoring agencies. It is revealed that attaching the name of the sponsor to the title of its journal is not a very safe proposition. It leads to frequent changes. A large number of periodicals, perhaps realising this, have dropped the names of sponsors altogether

Names of Sponsors in Titles of Periodicals

In this communication we are going to deal with the titles of a large number of periodicals where changes have come mainly due to changes and alternations in the names of sponsoring bodies of the periodicals. It has already been mentioned in the earlier communication that the name of the sponsoring body, either in full or in an abbreviated form, may form an important part of the title of a periodical. Hence, any change in the name of the sponsor would naturally affect the title of the periodical also.

It may be recalled that the scientific periodical started as a vehicle of communication between the members of a learned society and also as a continuing record of activities of the society. This new vehicle of communication, introduced in the 17th century, was gradually adopted and utilised by other agencies like professional associations, research institutions, academic institutions, governmental organisations and in fact any agency created and maintained to pursue the collective interest of a group of people. Whatever may be the objective of such an agency, from building a village temple to sending a man to the Mars, it must now have a journal. Such intimate being the relation between societies, institutions and other agencies with their respective journals, it is quite natural that in the naming of such journals the name of the agency also gets reflected. In fact this is the easiest and the most obvious way of naming a journal. The scope and interest of such a journal is fully revealed through the name of the sponsoring agency. As a result such journals have traditionally come to be titled as Proceedings of ..., Transactions of ..., Bulletin of ..., etc. or in the other way round, e. g., Aslib Proceedings or ALA Bulletin. Hence, it is no wonder that in any list or directory of periodicals, there are usually larger concentration of titles under words like Bulletin, Journal, Proceedings, Transactions, etc.

It was conjectured, quite early in the course of the present study, that titles with names of sponsor were more susceptible to frequent changes. The large number of items that have come in the present category substantiate the conjecture. Basically, the name of a sponsor may affect the title of its journal in three ways, viz., by addition, deletion, and alteration. We have observed not only these variations in our sample but many shades of differences, combinations, etc. These are being presented and discussed in the following paragraphs.

81 Alteration of the Name of the Sponsor by the Addition of Subject Terms

In this category we are taking six periodicals which have changed titles, all according to a pattern. In each case the change is entirely due to a change or slight alteration in the name of the sponsor. Again, this alteration is in the nature of addition of some new subject terms in the name of the sponsor. Thus, the scope of interest of a corporate body is first widened or changed and this is reflected in its name by the addition of extra subject terms. All these are, in turn, reflected in the title of the periodical because the name of the sponsoring agency forms part of the full title of such periodicals. The examples of this nature which have come into our sample are listed in Table 10 (next page).

In the first two items in Table 10, it can be seen, the names of the sponsoring bodies have been changed officially. In the first case there is hardly any suggestion of broadening of the scope of the periodical. In the second case, however, the renaming of the agency from the Bureau of Fisheries to Fish and Wild Life Service suggests considerable augmentation of functions and activities of the agency. But the periodical in question remains focussed on fisheries. To convey this the other part of the title

Table 10 - Change in the Name Sponsor by addition of Subject Terms

Changed to	Changed from [with dates of last change]
1. Collected Papers, Division of Medicine and Public Health of the Rockefeller Foundation (New York)	Collected Papers, International Health Division of the Rockefeller Foundation (New York), 1924-50
2. Fishery Bulletin, United States Fish and Wild Life Service	Bulletin of the United States Bureau of Fisheries, 1904-40
3. Institute Bulletin, Institute of British Carriage and Automobile Manufactures	Journal of the Institute of British Carriage Manufactures, 1912-37
4. Proceedings of the Australian Institute of Mining and Metallurgy	Proceedings of the Australian Institute of Mining Engineers, 1897-1919
5. Transactions of the American Society of Heating, Refrigerating and Air-Conditioning Engineers	Transactions of the American Society of Heating and Air-Conditioning Engineers, 1955-58
6. Transactions of the Mining, Geological and Metallurgical Institute of India	Transactions of the Mining and Geological Institute of India 1906/07 - 36/37

has also been changed from Bulletin to Fishery bulletin. This periodical had more change of this nature earlier also. The title was Bulletin of the United States Fish Commission, from 1881 to 1903.

The third item is a typical example of the category of title changes we are considering here. The carriage manufacturers renamed themselves as carriage and automobile manufacturers and the desire to reflect this in the title of the official journal is quite understandable. There is one more change here. The nature of the periodical has also been changed from 'Journal' to 'Institute bulletin'. This appears to be a clumpsy and unnecessary change. Since 1938 it is continuing with this title but it would not be a surprise if it is changed again to a simpler form.

The fourth and sixth items have certain similarities. In both the cases the professional institutes have introduced the term Metullurgy. This gives an immediate impression of the broadening of interest of the agencies and also broadening of scope of the journals. These two changes also signify coming closer of mining engineers and metallurgists and the realisation that they have many areas of common interest.

The fifth item had actually two changes. The Society called itself first as the Society of Heating, and Ventilating Engineers and this was also reflected in the title of the journal from 1895 to 1954 for the first 60 volumes. From 1955, as reflected in the title of the journal, the society styled itself as the Society of Heating and Air-Conditioning Engineers. The effective change was from Ventilating to Air-conditioning. But this new name was also to be changed soon, in 1959, to Society of Heating, Refrigerating and Air-Conditioning. The last change added the word Refrigerating.

82 Deletion of Subject Terms from the Name of the Sponsor

As antithetic to the tendency observed in the previous section, we found two cases in our sample where subject terms have been dropped from the name of the sponsoring agency. When this is reflected in the title of the respective periodicals it naturally gives the impression of narrowing down of scope. The titles that have followed this pattern are listed in Table 11.

Table 11 - Deletion of Subject Terms from the Name of the Sponsor

Changed to	Changed from [with dates of last change]
1. Journal of the South African Institute of Mining and Metallurgy	Journal of the Chemical Metallurgical and Mining Society of South Africa, 1902/03 - 55/56
2. Report, Indian Institute of Experimental Medicine	Report, Indian Institute for Biochemistry and Experimental Medicine, 1956/57 - 62/63

The first title in the list had one more change earlier. The sponsoring society was first named as the Chemical and Metallurgical Society from 1894 to 1902. After that it changed its name to Chemical Metallurgical and Mining Society. Thus, the first change was by the addition of a new subject term. The present change is by deletion of a subject term i.e., Chemical, from the name of the sponsoring body. It may also be noted that the agency changed from a society to an institute. In the second item in the list the deletion of the word 'Biochemistry' from the name of the agency makes all the difference between the old and the new title.

83 Addition and Deletion of Honorific Words in the Name of Sponsors

The next few titles in our sample show slight changes because of addition or deletion of honorific words. e.g., royal, imperial etc. in the name of the sponsoring bodies. We are listing these titles in two separate tables (12 and 13).

Table 12 - Addition of Honorific Words

Changed to	Changed from [with dates of last change]
1. Transactions of the Royal Institution of Naval Architects (London)	Transactions of the Institution of Naval Architects (London), 1860-1959
2. Quarterly Journal of the Royal Meteorological Society (London)	Quarterly Journal of the Meteorological Society (London), 1871-82.
3. Journal of the Royal Society of Arts (London)	Journal of the Society of Arts (London), 1852-1907

It can be observed that all the three titles listed are of British origin. In all the cases the institution or the society came to be known as the royal institution or royal society, obviously after getting the Royal Charter. It may be noted that except for this slight change there is no other alteration in the three titles. The changes do not affect in any way the area of interest of the agency or the scope of the journals.

Table 13 - Delection of Honorific Words

Changed to	Changed from [with dates of last change]
1. Journal of the Faculty of Science, University of Tokyo [Published in sections]	Journal of the Faculty of Science, Imperial University of Tokyo, 1925-44 [There are slight variations in dates between different sections]
2. Mycological Papers, Commonwealth Mycological Institute, Kew	Mycological Papers, Imperical Mycological Institute, 1925-47
3. Proceedings of the Japan Academy	Proceedings of the Imperial Academy of Japan, 1912-46
4. Report, Institute of Science (Bombay)	Report, Royal Institute of Science (Bombay), 1920-?
5. Report, Indian Council of Agricultural Research	Report, Imperial Council of Agricultural Research (India), 1929/30 - 46/47
6. Scientific Report of the Indian Agricultural Research Institute	Scientific Reports of the Imperial Agricultural Research Institute (Delhi), 1935/36-45
7. Yearbook of the Asiatic Society (Calcutta)	Yearbook of the Royal Asiatic Society of Bengal, 1936-50

It would be easily observed in Table 13 that all the title changes listed therein are due to the deletion of just two words viz., imperial and royal. These are, in turn, dependent on such important events like the fall of empires and monarchies. In five cases, out of seven mentioned, the change has been due to the deletion of the word imperial and in two cases the word royal has been deleted. The empire or the emperor concerned are the Japanese and the British respectively. The dates of change will indicate that the changes occured after the Second World War.

In the first and third items, the change is due to the renaming of the Imperial University of Tokyo to University of Tokyo. In the second title the word imperial referred to the British Empire. But after the disintegration of the mighty British Empire it was necessary to replace this offensive expression. The alternative was found in the new expression Commonwealth. It may be mentioned here that a number of institutions had a similar change in name including the celebrated Commonwealth Agricultural Bureaux.

Items four to seven refer to Indian titles. The changes are silent reminders to the most eventful period of disintegration of the mighty British Raj in India and the advent of Indian independence. In two cases (items 4 and 7) the word royal has been removed. In the other two cases (items 5 and 6) the word imperial has been replaced by Indian. In the last two cases, as a result of this change, it become redundant to retain the place names in titles which have also been removed.

84 Addition, Deletion and Alteration of Place Names of Sponsoring Agencies

In this section we have items where the name of the sponsoring agency has changed only by the addition, deletion or alteration of place names which has been reflected in the title of the corresponding periodical. These changes are being listed in three separate tables (14, 15 and 16).

Table 14 - Addition of Place Names

Changed to	Changed from [with dates of last change]
1. Circular of the National Paint, Varnish and Lacquer Association (Washington, DC)	Circular, American Paint and Varnish Manufactures Association, 1926-33
2. Proceedings of the Zoological Society (Calcutta)	Proceedings of the Zoological Society of Bengal, 1948-52
3. Report, Tocklai Experimental Station, Tea Research Association (Jorhat)	Report, Tocklai Experimental Station, Indian Tea Association, 1935-63
4. Report, Coffee Board (Bangalore)	Report, Indian Coffee Board, 1943-50
5. Report, Gelatine and Glue Research Association (London)	Report, British Gelatine and Glue Research Association, 1948/49-62/63
6. Rubber Board (Kottayam) Bulletin	Indian Rubber Board Bulletin, 1951-53/54

It would be seen that in all the titles listed in Table 14, deletion of words denoting the nationality of the sponsoring agencies e.g., American, Indian, British, etc. made it necessary to add the place name in each case. Thus, when the Indian Coffee Board is renamed as Coffee Board or the Indian Rubber Board is renamed as Rubber Board, their reports will naturally be titled as Report, Coffee Board and Rubber Board Bulletin. But the new titles will be less informative than the earlier titles. Hence, the addition of place names of the two Boards, in the present instance, improves the titles considerably.

The opposite trend i.e., deletion of place name, can be observed in the title Transactions of the British Ceramic Society. Its immediate previous title was Transactions of the Ceramic Society (Tunstall), from 1917/18-37/38. This particular periodical had seen two more titles earlier. From 1901-02-1902/03, corresponding to a part of the first volume, the title was Transactions of the North Staffordshire Ceramic Society and from 1903/04-16/17 the title was Transactions of the English Ceramic Society, which was very close to the present title.

Next, we take up a set of 9 titles where the place names forming part of names of sponsoring agencies have been altered. The titles are listed in Table 15.

Table 15 - Alteration of Place Names

Changed to	Changed from [with dates of last change]
1. Bulletin of the American Mathematical Society	Bulletin, New York Mathematical Society 1891-94
2. Bulletin of the Central Research Institute, University of Kerala - Ser A	Bulletin of the Central Research Institute, University of Travancore Ser A, 1950-57
3. Journal of the Bengal Natural History Society	Journal of the Darjeeling Natural History Society, 1926-39
4. Proceedings of the Mathematical and Physical Society of UAR	Proceedings of the Mathematical and Physical Society of Egypt, 1937-56 and 1957-58
5. Rajasthan University Studies - Physical Sciences	University of Rajputana Studies - Physical Sciences, 1951-
6. Report, East African Meteorological Department	Report, Meteorological Service, British East Africa, 1929-38
7. Research Publications, Irrigation Research Institute, Pakistan	Research Publications, Punjab Irrigation Research Institute (Lahore), 1933-52
8. University of Rajasthan Studies - Biological Sciences	University of Rajputana Studies - Biological Sciences, 1951-
9. University of Rajasthan Studies -- Medicine	University of Rajputana Studies - Medical Section, 1951-

Basically there are two types of changes in the titles listed in Table 15. In the first item the sponsoring society attained the status of a national society and as a result New York is replaced by the more wider term American. More or less it happened in the same way in the case of item 3 also. In this case a local society (i.e., Darjeeling) attained the status of a state society (i.e., Bengal). Item numbers 2, 5, 8 and 9 show a second type of change. The place or state remains the same but the name of the place is changed mostly due to socio-political reasons, beyond the control of the sponsoring agencies. Thus, Travancore became Kerala and Rajputana became Rajasthan. Due to political alliance, adjustment, and changes, again, Egypt became a part of UAR (item No. 4) and part of Punjab became a part of another state altogether i.e., Pakistan (item no. 7) and British East Africa became simply East Africa.

85 Change in the Names of Sponsors to indicate Change in the Area of Interest

A corporate body has, usually, a longer life than an individual. During this long life there can be change in area of interest due to various reasons like development of new subject areas, interest of the members, need of the community and so on. Indeed, to be everlasting a corporate body should change its area of active interest from time to time. This naturally would be reflected in its name and also in the title of its official organ if it carries the name of the sponsoring agency. A total of 16 cases of such changes have been noted in our sample which are listed in Table 16.

Table 16 - Change due to Redefining the Scope of Interest of Sponsoring Agencies

	Changed to	Changed from [with dates of last change]
1.	IEEE Transactions on Engineering Writing and Speech	IRE Transactions on Engineering Writing and Speech, 1958-62
2.	IEEE Transactions on Engineering Management	IRE Transactions on Engineering Management, 1954-62
3.	IEEE Transactions on Education	IRE Transactions on Education, 1958-62
4.	IEEE International Convention Record	IRE International Convention Record, 1960-62
5.	IEEE Transactions on Automatic Control	IRE Transactions on Automatic Control, 1956-62
6.	IEEE Transactions on Broadcast and Television Receivers	IRE Transactions on Broadcast and Television Receivers, 1952-62
7.	IEEE Transactions on Nuclear Science	IRE Transactions on Nuclear Science, 1954-62
8.	IEEE Transactions on Microwave Theory and Techniques	IRE Transactions on Microwave Theory and Techniques, 1953-62
9.	IEEE Transactions on Circuit Theory	IRE Transactions on Circuit Theory, 1953-62
10.	IEEE Transactions on Antennas and Propagation	IRE Transactions on Antennas and Propagation, 1952-62
11.	IEEE Transactions on Information Theory	IRE Transactions on Information Theory,
12.	IEEE Transactions on Broadcasting	IRE Transactions on Broadcasting, 1960-62
13.	IEEE Transactions on Reliability	IRE Transactions on Reliability and Quality Control, 1954-62
14.	Institute of Public Health Engineering (London) Journal	Journal of the Institution of Sanitary Engineering (London), 1916-55
15.	Journal of the Association of Official Analytical Chemists (Washington, DC)	Journal of the Association of Official Agricultural Chemists (Washington, DC) 1915/16-65
16.	Proceedings of the IEEE	Proceeding of the Institute of Radio Engineers (New York), 1913-62

All the first 13 titles and item no. 16 in Table 16 are sponsored by the same agency. As a consequence of a slight change in the name of the agency the titles of all the 13 periodicals had to be changed uniformly. The change from the Institute of Radio Engineers to Institute of Electrical and Electronics Engineering signifies a change in the area of interest of the agency. It is broadening the area of interest. This is automatically reflected in the titles of the periodicals sponsored by the Institute. In all the cases the change was introduced from 1963.

In item no. 14 the change in the name of the sponsor is actually more a change in terminology. Sanitary engineering and public health engineering mean more or less the same thing. In fact another change is in the horizon. The same discipline is now being called environmental engineering. In item no. 15 the name of the sponsor has changed from agricultural chemists to analytical chemists. This signifies considerable shift in the area of interest.

86 Change in the Character of the Sponsoring Agency

In many common uses, it is difficult to see, at times, the distinction between a society, an association, an institute, etc. The distinctions are blurred. Even then it has been necessary for some agencies to change over from an association to a society or from a society to an institute and so on. Periodicals where this type of changes have been reflected are listed in Table 17.

Table 17: Changes due to change in the character of Sponsoring Agencies

	Changed to	Changed from [with dates of last change]
1.	Annals of the New York Academy of Sciences	Annals of Lyceum of Natural History of New York, ?
2.	Bulletin, Commonwealth Scientific and Industrial Research Organization (Melbourne)	Bulletin of the Council for Scientific and Industrial Research (Melbourne), 1926-48
3.	Bulletin, Engineering Experiment Station, Ohio State University	Bulletin of the College of Engineering, Ohio State University, 1911-20
4.	Bulletin of the Indian Lac Research Institute	Bulletin of the Indian Lac Association for Research, 1928-31
5.	Bulletin of the National Science Academy	Bulletin of the National Institute of Science of India, 1952-69
6.	Bulletin of the University of Nebraska State Museum	Bulletin, Nebraska State Museum, 1924/36
7.	Journal of the Indian Mathematical Society	Journal of the Indian Mathematical Club, 1909-10
8.	National Institute of Health (Washington, DC) Bulletin	Hygeinic Laboratory (Washington, DC) Bulletin, 1900/30
9.	Report, East African Industrial Research Organization	Report, East African Industrial Research Board, 1943-53
10.	Report of the Haffkine Institute (Bombay)	Report of the Bombay Bacteriological Laboratory, 1906-24
11.	Report, Weather Bureau Union of South Africa	Report, Meteorological Office, Union of South Africa, 1925-43
12.	Transactions of the American Fisheries Society	Transactions of the American Fish-Cultural Association, 1878-84
13.	Transactions of the American Foundrymens Society	Transactions of the American Foundrymens Association, 1905-47
14.	Transactions of the Institute of Metal Finishing (London)	Journal of the Electrodepositors Technical Society (London)

It would be observed that in most cases the names of the sponsoring agencies have changed for the better. In some cases the change is just marginal. For example (item no. 13) American Foundrymen's Association became American Foundrymen's Society. Similarly, National Institute of Sciences of India became Indian National Science Academy (item no. 5). Such changes may be due to administrative or other considerations. But they may be expected to produce hardly any change in the scope and content of the respective periodicals. In some cases the names of the agencies have been coined more appropriately and specifically. For example in item numbers 8 and 10 a loose name like the Hygienic Laboratory has changed to a very specific name viz., the National Institute of Health and similarly, Bombay Bacteriological Laboratory has changed to Haffkine Institute (Bombay). In both the cases it has not been necessary to change the names in any way since 1931 and 1925 respectively.

The twelfth title in Table 17 had some interesting experiments to start with. From 1870 to 1884 the agency was calling itself Association but had some difficulty in coining the exact expression of its focus of interest. They started with the expression Fish Culturists Association but changed over to Fish-Cultural Association and then finally changed over to Fisheries Society, indicating a double change. A similar tendency is observed in the case of item no. 14 also. The agency, in this case, not only styled itself as a Society but was expressing their focus of interest first as Electroplaters and Depositors, then as Electrodepositors and finally as Metal Finishing. With the last change the Society also styled itself as Institute.

87 Change in the Focus of Interest

In the previous section we have considered cases where the character of the sponsoring agencies have changed e.g., an association changing to a society and so on. We have, of course, seen a few examples where this type of change has been coupled with slight change in the expression of area of interest also. In this section we are taking examples where the expressions relating to the nature of work of the sponsoring agencies and their focus of interest have been changed. The titles are listed in Table 18 (next page).

Quite a few title changes listed in Table 18 would reveal that in most of the cases only the wordings or expressions have changed in the names of agencies. The nature of work and area of interest have hardly changed. Thus, a change (item no. 2) from Bulletin, Association of Medical Librarians to the Bulletin, Medical Library Association means hardly any change in the scope and content of the journal. The change in item no. 4 i.e., from Timber Dryers and Preservers Association to Timber Development Association, only shows how clumsily the Association was named earlier.

Table 18: Change in the Focus of Interest

	Changed to	Changed from [with dates of last change]
1.	Bulletin of the Illinois Natural History Survey	Bulletin of the Illinois State Natural History Survey, 1918-41
2.	Bulletin, Medical Library Association (Baltimore)	Bulletin, Association of Medical Librarians (Baltimore), 1902
3.	Journal, Institute of Armament Technology (Poona)	Journal, Institute of Armament Studies (Poona), 1961-64
4.	Journal of the Timber Development Association of India	Journal of the Timber Dryers and Preservers Association of India, 1955/56-65
5.	Journal of the Institute of Petroleum (London)	Journal of the Institution of Petroleum Technologists (London), 1914-38
6.	Memoirs of the Indian Meteorological Department	Memoirs of the Indian Meteorological Department, 1907-35
7.	Papers from the Department of Geology, University of Glasgow	Papers from the Geological Department, University of Glasgow, 1914-47/50
8.	Report of the Bose Institute	Report of the Bose Research Institute (Calcutta), 1948/49-50/51
9.	Report, National Bureau of Standards	Report, Bureau of Standards (Washington, DC), 1901/02-33
0.	Royal Society of Health (London) Journal	Royal Society for the Promotion of Health (London) Journal, 1955-57
11.	Transactions of the American Microscopical Society	Proceedings, American Society of Microscopists, 1878-90

It is interesting to note how a simple and easily understandable title like the Royal Society of Health Journal (item no. 10) has been experimenting to bring in the expression 'health'. It started as the Transactions of the Royal Sanitary Institute of Great Britain, in 1879. After some mild changes it became the Royal Society for the Promotion of Health Journal in 1955 and then finally the present title.

It may also be observed that what is meant by Society of Microscopists (item no. 11) can be better expressed by its direct form Microscopical Society. But it took the agency about eleven years to realise this. Once this slight adjustment was made it has not been necessary to change it in any way since 1891.

88 Area of Interest of Sponsors Enlarged, Reduced, and Altered

A number of cases were observed where the change in the name of the sponsoring agency indicated a definite change in the area of interest which when reflected in the respective titles of periodicals indicated, in turn, change in the scope and content of the periodicals. These titles are listed in Table 19.

Table 19 - Area of Interest of Sponsors Changed

	Changed to	Changed from [with dates of last change]
	Scope broadened	
1.	Journal of South African Chemical Institute	Journal of the South African Association of Analytical Chemists, 1918-21
2.	Proceedings of the California Academy of Sciences	Proceedings of the Californian Academy of Natural Sciences, 1897-1906
	Scope reduced	
3.	Bulletin, Fisheries Research Board of Canada	Bulletin of the Biological Board of Canada, 1918-37
4.	Meteorological Department Papers, Egypt	Physical Department Papers, Egypt, 1920-48
5.	Report, Fisheries Research Board of Canada	Report, Biological Board of Canada, 1930-37
	Allered otherwise	
6.	Journal of the Institute of Brewing (London)	Journal of the Federated Institutes of Brewing (London), 1895-1903
7.	Proceedings, Ironmaking Conference	Proceedings, Blast Furnace, Coke Oven and Raw Materials Committee of the Iron and Steel Division, American Institute of Mining Metallurgical and Petroleum Engineers 1941-62

8. Wescon Technical Papers, Western Electronic Show and Convention	IRE Wescon Convention Record, 1957-62
9. Report, National Research Council of Canada	Report, Advisory Council for Scientific and Industrial Research of Canada 1917/18-24/25
10. Journal of the East Africa Natural History Society and National Museum (Nairobi)	Journal of the East Africa Natural History Society and Coryndon Museum (Nairobi) 1962-64
11. Sperry Rand Engineering Review	Sperry Engineering Review, 1948-67
12. CFTA Cosmetic Journal	TGA Cosmetic Journal, 1969-70

It is interesting to note that the Biological Board of Canada (item nos. 3 and 5) restyled itself as the Fisheries Research Board of Canada, thereby considerably reduced the area of its interest. The title of item no. 7 was perhaps one of the clumsiest one could think of. It is surprising that the publishers could pull on with such a title for full twenty-two years.

Item no. 10 had actually two more changes earlier. The reasons for change on both the occasions seem to be political or administrative, not very much affecting the area of interest of the society or the scope of the journal. The earlier titles were as follows:

1910-42 Journal of the Fast Africa and Uganda Natural History Society

1942-61 Journal of the Fast Africa Natural History Society

91 Names of Sponsors Dropped from Titles

911 Abbreviated Form

We have already paraded a number of instances where changes in the name of sponsoring agencies have affected the titles of periodicals, as the names of these sponsors had formed part of titles of their official organs. Either realising this risk or for any other considerations, quite a number of periodicals have taken the bold step of dissociating the name of the sponsor from the titles of the periodical. First, we are taking cases where only the abbreviated form of the names of sponsors were in the titles. They are listed in Table 20.

Table 20 - Abbreviated Names of Sponsors Dropped

Changed to	Changed from [with dates of last change]
1. Archives of General Psychiartry	AMA Archives of General Psychiatry, 1959-60
2. Archives of Internal Medicine	AMA Archives of Internal Medicine, 1950-60
3. Archives of Neurology	AMA Archives of Neurology, 1959-60
4. Archives of Ophthalmology	AMA Archives of Ophthalmology, 1925-60
5. Archives of Otolaryngology	AMA Archives of Otolaryngology, 1925-60
6. Archives of Pathology	AMA Archives of Pathology, 1951-60
7. Archives of Surgery	AMA Archives of Surgery, 1950-60
8. Automotive Engineering	SAE Journal, 1928-70
9. Bioscience	AIBS Bulletin, 1951-63
10. College and Research Libraries News	ACRL News, 1966
11. Instrumentation Technology	ISA Journal, 1954-66
12. Journal of Science and Technology	GEC-AEI Journal of Science and Technology, 1968
13. Mechanical Catalog	ASME Mechanical Catalogue and Directory, 1939-55
14. Model Aircraft	SMEA Journal, 1942-44
15. Polymer Engineering and Science	SPE Transactions, 1961-65
16. Productivity News	NPC Information, 1962-67
17. World Health	WHO Newsletter, 1948-56
18. Zinc Abstracts	ZDA Abstracts, 1943-61

In Table 20, changes in the first seven items are all due to dropping of a single abbreviated name i.e., AMA. The American Medical Association had lent its name to the above periodicals not from the beginning but at some stage of their publication. However, the Association withdrew its name from the titles at the same time. It would be accepted that this withdrawal does not seriously affect the titles as they are quite expressive even otherwise.

In the remaining items abbreviated names of agencies, in different fields, have been dropped. There is one common aspect in all these titles. The titles as they were e.g., SAE Journal, did not immediately reveal the subject scope and nature of the periodicals to all. For those who are quite familiar with the SAE (Society of Automative Engineers) or similar agencies through professional requirements, it is alright. But for others, including librarians, who may have to group titles of periodicals according to broad subject categories or do similar things, such titles are of positive disadvantage. Hence, it is in the fitness of things that such titles should change.

The changed title of item no. 13 viz., Mechanical Catalog may sound slightly ambiguous, at least to those of the modern library cataloguers who have started thinking in terms of computerised or mechanised catalogues. However, so long it is not ambiguous to the mechanical engineers for whom the periodical is meant, the title may continue. The rest of the new titles have all been done very carefully and they are quite expressive also.

912 Full Names Dropped

Under this category we were able to get more titles. The full list is given in Table 21.

Table 21 - Full Names of Sponsors Dropped from Titles

Changed to	Changed from [with dates of last change]
1. Applied Spectroscopy	Bulletin of the Society for Applied Spectroscopy (Chestnut Hill, Mass), 1947-51
2. Australasian Radiology	Journal of the College of Radiologists of Australasia, 1960-65
3. British Ceramic Abstracts	Abstracts, British Ceramic Society, 1938/39-40/41
4. British Dental Journal	Journal of the British Dental Association 1881-1903
5. British Foundryman	Proceedings, British Foundrymen's Association, 1898-1956
6. British Standards Yearbook	British Standards Institution Yearbook, 1946-?
7. Canadian Surveyor	Journal of the Association of Dominion Land Surveyors (Ottawa), 1922-26
8. Certified Engineer	Journal of the Institution of Certificated Engineers of South Africa, 1937-58
9. Ceylon Geographer	Bulletin of the Ceylon Geographical Society, 1945-57
10. Ceylon Medical Journal	Journal of the Ceylon Branch of the British Medical Association, 1904-51
11. Chemical Engineering Progress	Transactions of the American Institute of Chemical Engineers, 1908-46
12. Clinical Radiology	Journal of the Faculty of Radiologists (Briston), 1948-59
13. Coconut Bulletin	Bulletin of the Indian Central Coconut Committee, 1947/48-56
14. Condor	Bulletin, Cooper Ornithological Club of California, 1899
15. Contamination Control	Journal, American Association for Contamination Control, 1962-64
16. Daedalus	Proceedings of the American Academy of Arts and Sciences, 1846-1957
17. Electric Journal	Electric Club Journal, 1904-05
18. Engineering Journal	Journal, Engineering Institute of Canada, 1918-21
19. Electronics and Power	Journal of the Institution of Electrical Engineers (London), New Series, 1955-63
20. Farmer	Journal of the Jamaica Agricultural Society, 1897-1947

21. Fieldiana-Anthropology	Publications, Field Museum of Natural History (Chicago) - Anthropological Series, 1905-43
22. Fieldiana- Anthropology Memoirs	Memoirs, Field Museum of Natural History (Chicago)-Anthropology, 1925/32-35
23. Fieldiana-Zoology	Publications of Field Museum of Natural History (Chicago)-Zoological Series, 1905-43
24. Food Science	Bulletin of the Central Food Technological Research Institute (Mysore), 1952-56
25. Forest Products Journal	Journal of Forest Products Research Society, 1951-54
26. Georgetown Medical Bulletin	Bulletin of the Georgetown University (Washington DC) Medical Centre, 1947-59
27. Glasgow Mathematical Journal	Proceedings of the Glasgow Mathematical Association, 1952-66
28. Highway Research Abstracts	Research Abstracts, Highway Research Board, National Research Council (Washington, DC), 1931
29. Hospitals	Bulletin of the American Hospital Association, 1927-35
30. Indian Geographical Journal	Journal of the Madras Geographical Association, 1926-40
31. Indian Red Cross Journal	Journal of the Indian Red Cross Society 1927-36
32. International Surgery	Journal of the International College of Surgeons, 1938-65
33. Iowa State Journal of Science	Iowa State College Journal of Science 1926/27-59
34. Irrigation and Power Abstracts	Abstracts, Central Board of Irrigation and Power (Delhi), 1943-51
35. Israel Journal of Botany	Bulletin of the Research Council of Israel - Sec D Botany, 1955-63
36. Israel Journal of Zoology	Bulletin of the Research Council of Israel - Sec B Zoology, 1958-63
37. Journal of Applied Bacteriology	Proceedings of the Society for Applied Bacteriology (Cambridge) 1945-63
38. International Journal of Gynaecology and Obstetrics	Journal of the International Federation of Gynaecology and Obstetrics, 1963-68
39. Journal of Microscopy	Journal of the Royal Microscopical Society (London), 1878-1968
40. Journal of Paint Technology	Official Digest, Federation of Societies for Paint Technology (Philadelphia, Pa) 1960-65
41. Journal of Physics	Proceedings of the Physical Society (London), ?
42. Journal of Zoology	Proceedings of the Zoological Society London, 1833-1965
43. Jute Bulletin	Bulletin, Indian Central Jute Committee, 1938-46
44. Leather Science	Bulletin of the Central Leather Research Institute (Madras), 1954-62
45. Madhya Bharati, Pt 2A Physical Sciences	Journal of the University of Saugar, Part 2A Physical Sciences, 1957-58
46. Mechanical Engineering	Journal of the American Society of Mechanical Engineers, 1908-18
47. Mineralogical Magazine	Mineralogical Magazine and Journal of the Mineralogical Society, 1876-1969
48. Naval Engineers Journal	Journal of the American Society of Naval Engineers, 1889-1962
49. Navy	Navy League Journal, 1895-1908

50. New York State Dental Journal	Journal of the Dental Society of the State of New York, 1935-46
51. New Zealand Journal of Agriculture	Journal of Agriculture, Department of Agriculture, New Zealand, 1913-18
52. Occupational Therapy	Journal of the Association of Occupational Therapists (London), 1938-49
53. Operations Research	Journal of the Operations Research Society of America, 1952-55
54. Packaging Technology	Journal of the Institute of Packaging (London), 1948-68
55. Personnel Management	Journal of the Institute of Personnel Management (London), 1946-51
56. Petroleum Review	Institute of Petroleum (London) Review, 1947-67
57. Photogrammetric Engineering	News Notes, American Society of Photogrammetry, 1934-?
58. Physical Therapy	Journal of the American Physical Therapy Association, 1962-63
59. Physics Bulletin	Bulletin of the Institute of Physics and the Physical Society (London), 1961-67
60. Physiotherapy	Journal of the Chartered Society of Physiotherapy (London) 1943-47
61 Plant Engineer	Journal of the Institution of Plant Engineers (London) ? - 1963
62. Plastics and Polymers	Transactions and Journal of the Plastics Institute (London), 1954-68
63. Professional Geographer	Bulletin, American Society for Professional Geographers, 1944-45
64. Progress in Power Metallurgy	Proceedings of the Annual Meeting, Metal Powder Association (New York), 1946-59
65. Radio and Electronic Engineer	Journal of the British Institution of Radio Engineers, 1934/40-62
66. Radio Science	Journal of Research of the National Bureau of Standards (Washington, DC) - See D Radio Propagation, 1959-63
67. Science and Industry	Philips Serving Science and Industry, 1954-60
68. Sea Frontiers	Bulletin of the International Oceanographic Foundation, 1954-56
69. South African Journal of Science	Report of the South African Association for the Advancement of Science, 1903-08
70. South African Medical Journal	Journal of the Medical Association of South Africa, 1927-31
71. Structural Engineers	Journal of the Institution of Structural Engineers (London), 1923
72. Surveying and Mapping	Bulletin, American Congress on Surveying and Mapping, 1942-44
73. Tropical Ecology	Bulletin of the International Society for Tropical Ecology, 1960
74. Water Pollution Abstracts	Summary of Current Literature of the Water Pollution Research Board, Department of Scientific and Industrial Research, Great Britain, ?
75. Welding Journal	Proceedings, American Welding Society, 1922-36

Thus, from the lengthy list of Table 21, it would be immediately clear that a large number of periodicals have changed titles by deleting the names of sponsors from titles. In some instances the occasion has been a change in the name of the sponsor. We have seen earlier, in Sections 87, 88, that a number of periodicals have carried forward the new name of the sponsor in the title. But more journals have preferred to delete altogether the name of sponsor and completely reword the title. In many cases, however, the name of the sponsor has not changed. Hence, the reason for change of title appears to be more a desire to get a better name for the periodical.

A glance at Table 21 will reveal that almost in all cases the new titles are shorter, simpler, elegant and at the same time quite meaningful. Some pattern of change is also discernible. One simple pattern of change, exemplified by the first item in the list, is to coin the new title from only the most significant words (indicating the subject of interest) in the name of the sponsoring agency. Thus Bulletin of the Society for Applied Spectroscopy becomes simply Applied Spectroscopy. It would be observed that in such changes, the word or word-group indicating the nature of the periodical like bulletin, journal, proceedings, etc., can also be conveniently eliminated. There are a number of change of this type in the list, **e.g.**, items 15, 29, 43, 49, 53, 55, 56, 60, 61, 63, 71, 72, 73.

The second pattern of change that is observed is exemplified by the second item in the list. In this case, apart from the most significant word the name of the country has also been taken into consideration. Here also words like bulletin, journal, etc. have been eliminated. Similar cases are item 7 and 9 in the list.

The third pattern is very much similar to the second one. Here, apart from the name of the subject and the name of the country, the nature of the periodical has also been indicated in the new title. Thus, Journal of the British Dental Association has become British Dental Journal (item no. 4). Item 3, 6, 26, 27, 31, 33, 35, 36, 50, 51, 69, 70, are also of the same nature.

There are items in the list which come very near to the above patterns of changes but are slightly different in nature. For example, from the title of item no. 74 only the words indicating the area of interest of the agency were retained i.e., Water Pollution and with that was added Abstracts, which appears to be a more sensible and surely a simple replacement of the whole phrase 'summary of current literature'.

Two titles in the list (items 14 and 16) have changed in a completely different way. Cooper Ornithological Club changed the name of its bulletin to Condor, which is the name of a very large American vulture, one of the most powerful flying birds. This type of title, which is simple at the same time indicates the subject in an indirect and symbolic way has been quite successful in some cases. This particular title was introduced in 1900 and there has not been any need to change it. Three similar titles that come to mind immediately are Loris, from Ceylon and Cheetal from India and the Auk from Cambridge (Mass.). The next item (i.e. 16) is basically of the same nature but appears to be different because of a completely different context. The name Daedalus possibly symbolises the spirit of science, invention, and art. Daedalus, incidentally, is the name of a mythical craftsman of Crete who was responsible for the construction of a labyrinth to contain the monster Minotaur and made wings for himself and his son to escape from Crete.

Attention may also be drawn to two Indian titles from the same Ministry, though from different committees, which have changed exactly in the same way. These are Coconut Bulletin (item 13) and Jute Bulletin (item 43). Both the titles are quite good but it may be safely said that Indian Coconut Bulletin and Indian Jute Bulletin would have been equally good titles, if not better.

It may also be observed that the titles of two periodicals, coming out from two different CSIR laboratories have also changed exactly in the same way. They are Food Science (item 24) and Leather Science (item 44).

There are, however, examples in the list where renaming of a title by dropping the name of the sponsor has not followed any set pattern. As for example, the periodical Bulletin of the International Oceanographic Foundation has changed its title to Sea Frontiers (item no. 68). If it had followed any of the patterns mentioned earlier, the changed title could have been something as prosaic as Oceanography, Oceanographic Bulletin, International Oceanography, etc. But the Foundation evidently, wanted a more imaginative and fancy title than any one of them and hence Sea Frontiers.

The list of titles in Table 21 may give the impression that each periodical had changed title only once. But that is not so. Quite a few of them had changed titles several times, mostly due to change in the name of the sponsoring agency, and finally decided to drop the name of the sponsor altogether. Some typical examples are as follows: The periodical Certified Engineer had the following titles earlier -

1927-36 Journal of the Association of Certificated Mechanical and Electrical Engineers (Johannesburg), and
1937-58 Journal of the Institution of Certificated Engineers of South Africa

Similarly, the British Ceramic Abstracts was known by the following titles earlier:

1901/02-03 Abstracts, North Staffordshire Ceramic Society
1903/04-16/17 Abstracts, English Ceramic
1917/18-37/38 Abstracts, Ceramic Society (Tunstall)
1938/39-40/41 Abstracts, British Ceramic Society

The present title, it can be seen, gets over the difficulties that the periodical was having as a result of frequent changes in the name of the sponsor. It may also be seen that the second title viz., Abstracts English Ceramic came very close to the present title but was, unfortunately, given up.

913 Name of Sponsors Added to Titles

The large number of titles coming in the previous section indicates that freeing periodical titles from the name of the sponsor is a general tendency. But in spite of that some periodicals have chosen to add the name to titles. Surely, this is a retrograde tendency. The periodicals which have done so are listed in Table 22.

Table 22 - Names of Sponsors Added to Titles

	Changed to	Changed from [with dates of last change]
1.	ASHRAE Journal	Refrigerating Engineering, including Air-Conditioning,? - 1958
2.	Current Abstracts, Research and Development Department, General Foods Corporation (Terrytown, NY)	Current Abstracts of Scientific and Technical Literature, 1947-54
3.	Indiana University Mathematics Journal	Journal of Mathematics and Mechanics, 1957-69
4.	Journal of the American Veterinary Medical Association	American Veterinary Review, 1879-1915
5.	Journal of the American Society for Information Science	American Documentation, 1950-69
6.	Journal of the Air Pollution Control Association (Pittsburgh Pa)	Air Repair, 1951-55
7.	Journal of the American Oil Chemists Society	Oil and Soap, 1932-46
8.	Journal of the American Society for Psychical Research	Psychic Research, 1928-31
9.	Journal of the Indian Botanical Society	Journal of Indian Botany, 1919/20-23
10.	Journal of the National Integrated Medical Association (Mysore)	National Medical Journal, 1959-71
11.	Journal of the Institution of Municipal Engineers (London)	Chartered Municipal Engineer, 1962-64
12.	Journal of the Water Pollution Control Federation (Washington, DC)	Sewage and Industrial Wastes, 1950-59
13.	Observers Handbook, Royal Astronomical Society of Canada	Canadian Astronomical Handbook, 1907-08
14.	SAM Advanced Management Journal	Advanced Management - Office Executive, 1962-63
15.	SPE Journal	Plastic Engineer, 1949

If we closely look at some of the changed titles listed in Table 22 it would be evident that some of them have not improved at all. In items 1, 14 and 15 the names of sponsors have been added in their abbreviated froms. In the case of the first item, the sponsor (i.e., the American Society of Heating, Refrigerating and Air-Conditioning Engineers) evidently wanted to focus in the title the whole range of its area of interest. But to do so in the usual way would have meant a long title. To avoid that it has simply added the abbreviated name of the society.

Change in the next title (item 2) has brought in some improvement. The former title was too wide without revealing any way that the contents had anything to do with Food science or technology. Addition of the name of the sponsor viz., General Foods Corporation has removed this defect but the new title is lengthier and does not read well.

The change in the fourth item in the list is exactly in the opposite direction of some of the title changes that we have seen in the previous section. The old title was exactly on the pattern of titles to which many have changed. It is surprising that the periodical is continuing with the changed but old-fashioned title since 1916.

The fifth item, coming as it is from our own field, needs some comments. As is well known, previously the name of the sponsor was American Documentation Institute and the title of its periodical -- American Documentation. The name of the sponsor has changed to American Society for Information Science (ASIS) and the title of the same periodical to Journal of the American Society for Information Science (JASIS). On the analogy of the previous titles the new title could have been something like American Information Science. But the Society preferred to add its own name to the title to indicate the exact scope of the journal. One temptation for doing this might have been the immediate advantage of a pronunciable acronym i.e., JASIS.

The sixth title viz., Air Repair was perhaps too imaginative for a journal on air pollution. But the most simple and obvious title i.e., Air Pollution was already taken up by another periodical. Hence, adding the name of the sponsor was thought most suitable.

The seventh item, although started only in 1924, had experimented with three titles before it took to the present title. It started as Journal of Oil and Fat Industries but soon decided to delete the word Journal. As a result the second title was only Oil and Fat Industries. Surely, this was not a very happy and meaningful change. Naturally, this title was also short-lived. This time the change was in the subject-denoting terms. Instead of oil and fat the Society decided to focus on oil and soap and that was exactly the next title viz., Oil and Soap. Perhaps, this too was felt to be inadequate after some time. Hence, they finally changed to the present title i.e,, Journal of the American Oil Chemists Society. Through this series of changes one idea comes up. It appears to be a better policy, in some cases, to attach the name of the sponsor to the title of a periodical than try to enumerate or indicate the scope of the journal. Thus, in the present case instead of enumerating fat, oil, soap, etc. in which oil chemists were interested the name of the Society in the title would indicate that the scope of the periodical includes all matters in which oil chemists are interested.

Items 8 and 9 in the list have changed titles exactly in the opposite way of a number titles we have considered in the previous section. We have seen there that a common way of dropping the name of sponsor from a title is to rename it by taking only the significant terms denoting the area of interest of the agency. The title at item no. 8 viz., Psychic Research was exactly a title of this nature. Hence, this appears to be a retrograde step. Item 9 is also very nearly of the same nature.

The 10th item had a long series of title changes since its inception in 1873. The present title is only a decade old in its life of hundred years. The chronology of title changes, which will reveal also the experiment, of the periodical is as follows:

1873/74-89/90 Proceedings of the Association of Municipal and Sanitary Engineers and Surveyors (London)

1890/91-1908-09 Proceedings of the Incorporated Association of Municipal and County Engineers (London)

1909/91-12/13 Proceedings of the Institution of Municipal and Sanitary Engineers and Surveyors and County Engineers (London)

1913/14-46 Journal of the Institution of Municipal and County Engineers (London)

1962-64 Chartered Municipal Engineer.

It would be observed from the above that the periodical has been attaching the name of the sponsor in almost all the previous titles. Only in the last title there was a bold attempt to detach the name of the sponsor but that was short lived. All the changes, it would be observed, are due to change in the name of agency itself. It appears the agency is not sure as to how best to call itself.

Item no. 13 has one peculiarity. The changed title is a combination of two types of titles. Observers Handbook can itself be a good title. But with that the name of the sponsoring agency as has been added very loosely. The name of the sponsor also takes care of the loss of information that was sustained as a consequence of dropping the term Canadian from the earlier title.

The last two items, (14 and 15), as said earlier, have added the names of sponsors in abbreviated form. The abbreviation SPE in the 15th item stands for Society of Plastic Engineers. This is in no way an improvement over the earlier title. Similarly, the very endearing abbreviation SAM, in the 14th item stands for Society for the Advancement of Management. In this case, in spite of adding the name of the sponsor, much of the original title has been kept intact. As a result there is no loss of information content.

914 Names of Sponsors Abbreviated

In this section we are going to consider ten cases where the periodicals have just abbreviated the names of the sponsor, which were already there with the titles, to create new titles. One thing is quite obvious that all the titles have become shorter in the process. The titles are listed in Table 23.

Table 23 - Names of Sponsors Abbreviated in Titles

Changed to	Changed from [last change with dates]
1. EEI Bulletin	Edison Electric Institute (New York) Bulletin, 1933-59
2. GGRA Abstracts	Abstracts, Gelatine and Glue Research Association (Birmingham), 1963-65
3. IEE-IERE Proceedings, India	Proceedings of the Indian Division, Institution of Electronic and Radio Engineers (London), 1964-68

4. PSA Journal	Journal of the Photographic Society of America, 1935-46
5. SFI Bulletin	Bulletin, Sport Fishing Institute, 1951-60
6. SIAM Journal on Applied Mathematics	Journal of the Society for Industrial and Applied Mathematics (Philadelphia, Pa) 1953-65
7. SIAM Journal on Control	Journal of the Society for Industrial and Applied Mathematics (Philadelphia, pa) - Ser A Control, 1962-65
8. SIAM Journal on Numerical Analysis	Journal of the Society for Industrial and Applied Mathematics (Philadelphia, Pa) - Ser B Numerical Analysis, 1964-65
9. TAPPI	Technical Papers and Addresses, Technical Association of the Pulp and Paper Industry (New York), 1919-48
10. WHO Chronicle	Chronicle of the World Health Organization, 1947-58

It would be observed that the abbreviations of names of sponsors are at the beginning in each case. This was also so in the case of three of the titles considered in the previous section. In most cases the changed titles have only generic words like bulletin, journal, etc, apart from the abbreviated names of sponsors. In one case at least viz., TAPPI, even this has not been thought necessary. One particular acronym i.e. SIAM appears in three cases. In fact all of them originated from the same periodical. This abbreviation, if not familiar, may be taken to mean the country viz. Thailand. It has been necessary here to amplify by more words the common title SIAM Journal, because there are three titles now.

Here, then, we find another way of shortening the titles of periodicals. Apart from dropping the names of sponsors altogether from titles, titles have also been shortened by abbreviating the names of sponsors in titles.

915 Names of Sponsors Changed due to other Reasons

In this Section we are considering just four items where the names of sponsors have changed names due to miscellaneous causes and the changed names, in all the cases, have been reflected in the new titles.

Table 24 - Names of Sponsors Changed due to Miscellaneous Reasons

Changed to	Changed from [last change with dates]
1. Journal of the Asiatic Society of Bombay	Journal of the Bombay Branch of the Royal Asiatic Society (London), 1841-1954
2. Report of the Indian Council of Medical Research	Technical Report of the Scientific Advisory Board, Indian Council of Medical Research 1951/52-57/58
3. Report of the Kodaikanal Observatory	Report of the Kodaikanal and Madras Observatory, 1899-1921
4. Studies of the Fisheries Research Board of Canada	Studies from the Stations of the Fisheries Research Board of Canada, 1951- ?

In the first item the change was necessitated after the Indian Independence, when Royal Asiatic Society of London had to be Indianised. In the second item there were a number of changes even before. Although the name Indian Council of Medical Research (ICMR) had been coined before, yet it formed only a part of another agency viz., Scientific Advisory Board. The present title signalled the new and independent status of the ICMR. It may also be observed that the occasion was utilised to bring in another change i.e., the title was changed from Technical Report to Report. The third item reflects only a minor change in the organisational set up. In the fourth item the name of the sponsor, strictly speaking, has not changed. It remains the Fisheries Research Board of Canada and the new title is also as expressive as before. Only some of the unnecessary words have been cut off.

TEACHERS COLLEGE LIBRARIES IN THE STATE OF KARNATAKA, INDIA

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Results of a survey of the libraries of the Teachers College, twentyfour in number, in the state of Karnataka are presented. Several characteristics of these libraries such as objectives, collection, clientele, staff, pay scales, services, facilities, budget, etc, are considered and discussed. It is urged that librarians should take a lead to improve the present state of affairs by providing better library services.

All teachers colleges in the state of Karnataka, thirty in number, have a library. Several characteristics of teachers college libraries such as their objectives, collection, clientele, staff, pay scale, services, facilities and budget are considered and discussed in this article, based on the information provided in response to a questionnaire completed by twenty-four teachers college librarians or librarians in charge.

Objectives of Teachers College Libraries in the State of Karnataka

Objectives are statements of purposes. They provide motivation to library staff and give direction to the library as a whole. They serve as a basis for control and help in evaluating the results of operation. Twenty-two out of twenty-four teachers college librarians have identified their objectives. All of them have stated a primary objective as "to promote educational goals of the college." Other equally important objectives identified by them are as follows:

Instructional

- to provide text books, reference books, and books of general interest
- to provide periodicals and newspapers
- to help faculty in improving the quality of teaching
- to acquaint students and staff of the latest developments and research in the field

General

- to provide for recreational reading
- to inculcate and promote reading habits of students

The above objectives were identified by the librarians. The principals of the teachers colleges responding to question, "Of what use is the library to you in your B.Ed. instructional program?" have provided further insights in the matter. All of them have stated in general terms that the library supports the instructional program and is essential. One principal has characterized the library as "the wheel of progress in education." The more important uses of the library identified by the principals are as follows:

Instructional uses:

- to help students do class assignments
- to prepare students for participation in class discussions
- to provide text books
- to provide school texts for lesson planning
- to help students and teachers to be in touch with research in the field
- to provide original documents for study
- to do reference work
- to support teaching and learning purposes
- to promote independent study
- to serve the educational objectives of the college
- to stimulate reading habits

- to promote creative writing

Other uses:

- to provide general knowledge
- to introduce students to newer fields of knowledge
- to develop the habit of using the library
- to provide for cultural activities
- to provide for leisure reading
- to help students establish reading interests

Thus it can be seen how the principals of the Teachers Colleges are conscious of the potential of a library and list the many things their library can do or should do although they do not really assert that the library is doing all the things they list. Compared with the views expressed by the principals, the objectives set forth by the librarians are more modest. For example, the librarians do not include promotion of creative writing, provision for cultural activities, and introducing students to newer fields of knowledge. However, basically the principals as well as the librarians seem to agree that the library should support the educational goals of the college by providing relevant materials such as books, periodicals, maps, charts etc. Both think that the library should create and promote reading habits. Both recognize the essential need for the existence of the college library.

Collection

Twelve Teachers College libraries or 50% have a total book collection which is less than 5,000 volumes. Six Teachers Colleges (25%) have over 10,000 volumes (Table 1). Ten college libraries have less than 3,000 volumes in Education while two college libraries have over 10,000 volumes in Education (Table 2). Ten college libraries have less than 3,000 volumes in English while three have over 10,000 volumes in English (Table 3). Sixteen Teachers College libraries have less than 1,000 volumes in Kannada, the official language of the state (Table 4). Six teachers college libraries (25%) have less than 2,000 volumes which is very inadequate to support a graduate program in Education. Seven libraries have less than 1,000 volumes in English. The teachers Colleges in Karnataka mostly use English as the medium of instruction and books in Education are published mostly in English. In the light of these facts the holdings of less than 1,000 volumes by a considerable number of teachers college libraries is indeed alarming.

TABLE 1

BOOK COLLECTION (TOTAL): TEACHERS COLLEGE LIBRARIES

Number of Volumes	Number of teachers college libraries
Less than 1,000	4
1,000 - 1,999	2
2,000 - 2,999	2
3,000 - 3,999	2
4,000 - 4,999	2
5,000 - 5,999	2
6,000 - 6,999	2
7,000 - 7,999	2
8,000 - 8,999	0
9,000 - 9,999	0
10,000 and over	6
	24

Table 5 gives details of books acquired during the years 1971-72, 1972-73, and 1973-74. Sixteen teachers college libraries have provided the information for the year 1971-72, and twenty-three colleges have done so for the years 1972-73 and 1973-74.

Several teachers colleges were established in 1970-71 and did not have any acquisition program for their libraries during that year. Nine teachers college libraries (39%) during 1973-74 have added less than 300 volumes to their collections.

Reference Collection

ALA Glossary of Library Terms defines a reference book as "a book designed by its arrangement and treatment to be consulted for definite items of information rather than to be read consecutively"[1]. In several teachers college libraries visited by the investigator text books were found to be included in the reference collection. The teachers college libraries should follow this criteria in organizing a re-

TABLE 2

BOOK COLLECTION (NUMBER OF VOLUMES IN EDUCATION): TEACHERS COLLEGE LIBRARIES, STATE OF KARNATAKA, INDIA

Number of Volumes	Number of teachers college libraries Number of volumes in Education
less than 1,000	3
1,000 - 1,999	6
2,000 - 2,999	1
3,000 - 3,999	4
4,000 - 4,999	4
5,000 - 5,999	2
6,000 - 6,999	1
7,000 - 7,999	0
8,000 - 8,999	0
9,000 - 9,999	0
10,000 and over	2
	23

ference collection. Twenty-one teachers college libraries have a separate reference collection and three do not have a separate reference collection.while one library has over 1,000 volumes in its reference collection (Table 6).

Secondary School Textbook Collection

Secondary School textbooks form an important part of the book collection of a teachers college library. The students of the college need to become familiar with the secondary school texts for they will have to use them in their lesson planning. Table 7 gives details of the secondary school text book holdings of teachers college libraries in the state.

As many as eleven college libraries have less than 200 volumes in their secondary school text book collection and only three of them have over 1,000 volumes. Four teachers college libraries do not have any secondary school textbooks in their collection.

TABLE 3

BOOK COLLECTION (NUMBER OF VOLUMES IN ENGLISH) TEACHERS COLLEGE LIBRARIES

Number of Volumes	Number of teachers college libraries Number of volumes in English
Less than 1,000	7
1,000 - 1,999	2
2,000 - 2,999	1
3,000 - 3,999	4
4,000 - 4,999	3
5,000 - 5,999	1
6,000 - 6,999	1
7,000 - 7,999	0
8,000 - 8,999	0
9,000 - 9,999	1
10,000 and over	3
	23

Periodicals

Periodicals form an indispensable source of information in every type of library. They originate from various sources and provide current information in their chosen field of knowledge. There are periodicals of a general nature as well as periodicals with specialized interests meant to serve special groups of people. Table 8 tabulates data concerning periodical collections of teachers college libraries in the state of Karnataka.

Eleven teachers college libraries subscribed to less than twenty periodical titles; ten libraries subscribed to less than ten periodical titles in Education;

TABLE 4

BOOK COLLECTION (NUMBER OF VOLUMES IN ENGLISH): TEACHERS COLLEGE LIBRARIES

Number of Volumes	Number of teachers college libraries Number of volumes in Kannada
Less than 1,000	16
1,000 - 1,999	5
2,000 - 2,999	2
3,000 and over	0
	23

TABLE 5

ACQUISITION OF BOOKS: TEACHERS COLLEGE LIBRARIES

Number of books added	Number of teachers college libraries		
	1971-72	1972-73	1973-74
less than 100	1	2	1
100 - 199	1	2	2
200 - 299	3	3	6
300 - 399	3	3	0
400 - 499	2	0	3
500 - 599	2	3	2
600 - 699	2	2	1
700 - 799	0	1	2
800 - 899	0	1	1
900 - 999	0	1	0
1,000 and over	2	5	5
	16	23	23

TABLE 6

REFERENCE COLLECTION: TEACHERS COLLEGE LIBRARIES

Number of reference books	Number of teachers college libraries
less than 100	3
100 - 199	4
200 - 299	3
300 - 399	3
400 - 499	2
500 - 599	3
600 - 699	1
700 - 799	0
800 - 899	0
900 - 999	1
1,000 and over	1
	21

TABLE 7

SECONDARY SCHOOL TEXTBOOK COLLECTION: TEACHERS COLLEGE LIBRARIES

Number of secondary school textbooks	Number of teachers college libraries
less than 100	5
100 - 199	6
200 - 299	1
300 - 399	1
400 - 499	2
500 - 599	1
600 - 699	1
700 - 799	0
800 - 899	0
900 - 999	0
1,000 and over	3
	20

thirteen libraries subscribed to less than twenty periodical titles in English language, while sixteen libraries subscribe to less than ten periodicals in Kannada. Only two college libraries subscribe to more than fifty periodical titles in total as well as in English.

TABLE 8

PERIODICALS COLLECTION: TEACHERS COLLEGE LIBRARIES

Number of periodicals	Number of teachers college libraries			
	total no. subscribed	no. in Education	no. in English	no. in Kannada
less than 10	1	10	6	16
10 - 19	10	5	7	2
20 - 29	2	2	2	0
30 - 39	3	2	3	0
40 - 49	4	2	1	0
50 and over	2	0	2	0
	22	21	21	18

The number of periodical titles subscribed by teachers college libraries in Karnataka during the years 1971-72, 1972-73, and 1973-74 is given in Table 9. Nine teachers college libraries out of eighteen that have provided the information for the year 1973-74 subscribe to less than twenty periodical titles.

It may be assumed that the libraries that have not provided the requested information subscribe to less than ten periodical titles during the same year. Such neglect of periodical resources is certainly not the result of the absence of periodicals in the country. Ulrich's International Periodicals Directory, Fifteenth Edition 1973-74 which certainly does not include every periodical published in India, lists more than 40 periodical titles in education including indexing and abstracting services published in India. Most of these publications are in English. Teachers college libraries have to become aware of periodicals as an important source of information and should begin to use them increasingly.

Non-Book Materials

None of the teachers college libraries in Karnataka has any microform collection. Seventeen college libraries have some charts and geographical maps. Seven college libraries do not have either charts or maps. Twelve teachers colleges (50 per cent) have some audio-visual aids. Seven colleges have 16 mm film projectors, five have an epidiascope, four have a taperecorder, and two a radio. One college has a linguaphone. However, the colleges do not have any provision for software to make use of the equipment they have. Further, there is no easy way of getting equipment repaired when it goes out of order. Neither non book materials nor the equipment necessary to use them seem to be in active use in any of the seven colleges the investigator visited. Teachers college libraries have nothing to do with these articles and in most cases they are under the direct charge of the principal of the college or in charge of a member of the faculty.

TABLE 9

PERIODICALS SUBSCRIBED: TEACHERS COLLEGE LIBRARIES

Number subscribed	Number of teachers college libraries		
	1971-72	1972-73	1973-74
less than 10	0	2	3
10 - 19	4	3	6
20 - 29	3	4	1
30 - 39	2	2	3
40 - 49	2	2	3
50 and over	2	2	2
	13	15	18

Organization of Materials

Twenty-one teachers college libraries in Karnataka have classified and organized their collection. Eight of them use Colon Classification system, nine use Dewey Decimal Classification system while four libraries use a "local" system. Three libraries have not classified library collections according to any system. Thirteen teachers college libraries have a book catalogue. Eight libraries provide a card catalogue and three have no catalogue of any kind. The book catalogues of some of the teachers college libraries are really the list of acquisitions and these catalogues are never up-to-date. Further, in a majority of teachers college libraries, the existing book catalogues are not available for the use of students.

Out of twenty-four teachers college libraries, seventeen have closed access and the students do not have the opportunity of examining books personally or of browsing among them. Seven teachers college libraries have open access to the book stacks. Teachers college libraries are open for a minimum of six hours during weekdays, Monday through Saturday. Twenty-two teachers college libraries are closed on Sundays and holidays. One library is open for three hours while another for four hours during Sundays and holidays. Four libraries are open for eight hours a day during weekdays.

Clientele

All teachers college libraries in Karnataka provide service to students and members of the teaching staff of their colleges. Fifteen of the twenty-four teachers college libraries also provide service to the administrative staff of the respective colleges. One library offers service to former students of the college while another provides service to teachers of practicing schools. One teachers college managed by a religious organization provides services to the monastic members of the organization in addition to serving students and teachers.

Professional Staff

Seventeen teachers college libraries (71%) in Karnataka have a full time librarian. Five teachers college libraries (21%) have a clerk working as a clerk-cum-librarian. Two libraries are in charge of faculty members. (Table 10).

TABLE 10

PROFESSIONAL STAFF: TEACHERS COLLEGE LIBRARIES

Person in charge	Number of teachers college libraries	Per cent
full time librarian	17	71
librarian-cum-clerk	5	21
faculty member in charge	2	8
total	24	100

The table shows that the teachers college administrators follow the practice of having clerks with no training whatever in library science work as librarians or of having a teacher in charge of a library in addition to his teaching work. This acts as a deterent to the upgrading of library services.

Seven librarians of teachers college libraries in Karnataka do not have a college degree or college education. It is certainly difficult to imagine how a person without college education can appreciate or provide efficient library service to post-graduate students. (Table 11).

TABLE 11

PROFESSIONAL STAFF: GENERAL QUALIFICATION:

General qualification	Number of librarians	Per cent
secondary school leaving certificate	4	18
pre-university course	3	14
Bachelor's degree	14	63
Master's degree	1	5
	22	100

Fourteen librarians (63%) have a general degree, four librarians (18%) have secondary school leaving certificate, three (14%) have completed pre-university course and one librarian (5%) holds a master's degree in a subject field.

Eleven librarians (50%) have a Bachelor's degree in Library Science in addition to a general degree. Six librarians (27%) hold an undergraduate Diploma in Library Science while four (18%) have an undergraduate certificate in Library Science involving three months training in basic principles of Library Science. One librarian has no professional training of any kind. (Table 12)

TABLE 12

PROFESSIONAL STAFF, PROFESSIONAL QUALIFICATION:

Professional qualification	Number of librarians	Per Cent
none	1	5
certificate in library science	4	18
Diploma in library science (undergraduate)	6	27
Bachelor's degree in library science	11	50
	22	100

A majority of librarians in teachers college libraries in Karnataka have either a Bachelor's degree in Library Science or an undergraduate Diploma in Library Science. While the adequacy of the Diploma for the position of librarian in a teachers college is questionable, the three month certificate course is certainly inadequate for the job and is not meant for the preparation of a professional librarian.

TABLE 13

PROFESSIONAL STAFF, LIBRARY EXPERIENCE:

Working experience in a library	Number of librarians	Per Cent
up to two years	9	41
up to five years	7	32
over five years	6	27
	22	100

Nine librarians (41%) have library work experience up to two years while six librarians of teachers college libraries in Karnataka have over five years of library experience. (Table 13)

Although a large number of librarians of teachers colleges in Karnataka have experience of working in a library, it may not mean much as they work in an environment not conducive to professional development.

Pay Scales of Professional Library Staff

There is no uniformity in pay scales given to librarians working in teachers colleges in Karnataka. The pay scales do not appear to reflect the qualifications of the librarians. Table 14 gives details of pay scales of librarians of teachers colleges in Karnataka.

TABLE 14

PROFESSIONAL STAFF, PAY SCALES:

Pay scale in rupees	Number of librarians in the scale	Per Cent
400-40-800-50-950	1	5
400-30-640-40-800	1	5
300-25-600	2	9
175-10-275-15-350-EB-20-450	9	41
90-4-110-5-170-EB-6-200	6	27
90-3-105-4-145-EB-5-200	3	13
	22	100

Only four librarians of teachers colleges in Karnataka are getting a pay scale which can be equated with that of teaching staff at the beginning level. Rs. 400-950 is the pay scale of a lecturer in a university; Rs. 400-800 is the senior scale of a lecturer in an affiliated college; and Rs. 175-450 is the pay scale of a teacher in a secondary school in Karnataka. To reach the maximum in the three scales mentioned above one has to work for thirteen years, twelve years, and twenty years respectively. The other scales which are meant for clerks are applied to librarians. Nearly half of the librarians of teachers colleges in Karnataka are getting the pay scale of a clerk, and a clerk is not required to have a college education or a college degree. It is indeed difficut to get qualified persons for the post of a librarian at this salary, and those that do get in suffer from an inferiority complex and lack any incentive for doing a good job.

Support Staff

Sixteen teachers college libraries do not have any support staff and have no one on the staff other than the librarian who has to take care of professional and non-professional work in the library. The Regional College of Education in Mysore has three assistant librarians along with a librarian, two attenders and two peons. (an attender is literate while a peon is not.) However, being a national institution supported by the National Council of Educational Research and Training it is rather an exception. Two teachers college libraries have two attenders each while one library has one attender. Two teachers college libraries have one peon each.

Services

Services offered at the teachers college libraries include instruction in the use of the library, circulation of books, circulation of periodicals, indexing of periodicals, bibliographic service, preparation of abstracts, preparation of reviews, arranging book exhibits and interlibrary loans.

a) Instruction in the use of the Library

Fifteen out of twenty-four teachers college libraries in Karnataka offer instruction in the use of the library to their students. The duration of such instruction in eight of the fifteen libraries is one day. In other cases it varies from two days to two weeks. Nine teachers college libraries do not offer any instruction in the use of the library to their students.

TABLE 15

SERVICES: CIRCULATION OF BOOKS, 1973-74:

Number of books circulated in 1973-74	Number of teachers college libraries	Per Cent
less than 1,000	4	20
1,000 - 1,999	3	15
2,000 - 2,999	2	10
3,000 - 3,999	3	15
4,000 - 4,999	0	--
5,000 - 5,999	2	10
6,000 - 6,999	2	10
7,000 - 7,999	0	--
8,000 - 8,999	1	5
9,000 - 9,999	0	--
10,000 and over	3	15
TOTAL	20	100

b) Circulation of Books

Circulating books is an important service of Teachers College Libraries in Karnataka. All but one of them offer this service. Table 15 shows the circulating activity of libraries as it applies to books. Three libraries did not provide the requested information. Four libraries (20%) circulate less than 1,000 volumes per academic year. Three libraries (15%) circulate more than 10,000 volumes per academic year.

The fact that three teachers college libraries during the year 1973-74 have circulated over 10,000 volumes seems to imply that circulation of books could substantially increase if the libraries have the required books in sufficient numbers and encourage circulation.

c) Circulation of Periodicals

Eighteen of the twenty-four Teachers College Libraries in Karnataka do not circulate periodicals. Six college libraries do circulate periodicals. Table 16 gives details of circulation of periodicals.

The majority of teachers college libraries do not circulate periodicals. One library has circulated over 1,000 periodicals during 1973-74. Each library has to make its policy regarding the issue of periodicals depending on its resources and circumstances.

TABLE 16

SERVICES: CIRCULATION OF PERIODICALS

Number of periodicals circulated in 1973-74	Number of teachers college libraries	Per Cent
less than 100	2	33
100 - 199	2	33
200 - 299	0	--
300 - 399	0	--
400 - 499	0	--
500 - 599	1	17
600 - 699	0	--
700 - 799	0	--
800 - 899	0	--
900 - 999	0	--
1,000 and over	1	17
Total	6	100

d) Indexing of Periodicals

Two teachers college libraries in Karnataka index periodicals. One library indexes forty periodicals and the other sixty-four periodicals. The indexed information is circulated among the teaching staff and is available for student use. Twenty-two teachers college libraries do not offer such service.

e) Bibliographic Service

Two of the twenty-four teachers college libraries in Karnataka provide bibliographic service on request. Short bibliographies on specific topics are provided to the students or teachers on request. Twenty-two teachers college libraries do not offer any bibliographic service.

f) Preparation of Abstracts

None of the twenty-four teachers college libraries in Karnataka offer abstracting service.

g) Preparation of Reviews

None of the twenty-four teachers college libraries in Karnataka offer to prepare reviews for their patrons.

h) Book Exhibits

Fourteen of the twenty-four teachers college libraries in Karnataka arrange book exhibits. Most of them exhibit newly received books while some organize a book exhibit around a specific theme.

i) Interlibrary Co-operation

Twelve of the twenty-four Teachers College Libraries (50%) provide interlibrary loan service and make use of the services of other libraries in the area. However, the investigator's on the spot study indicated that the students are not aware of the provision for such service and the number of items procured on interlibrary loan is negligible indeed. None of the teachers college libraries has any other form of interlibrary co-operation.

Administration

The librarian of a teachers college in Karnataka functions as an integral part of the college staff and is directly responsible to the principal of the college who is the chief executive officer of the institution.

a) Library Committee

Four Teachers college libraries out of twenty-four have a Library Committee. The principal of the college is the chairman of the committee. Members of the faculty and students are represented in the Library Committee in three colleges while in the fourth students are not represented although faculty is represented. The Librarian acts as the member secretary of the committee in case of three college library committees. In the case of one college library committee he is not a member of the committee and attends the meetings of the committee on request only. Twenty teachers college libraries in Karnataka do not have a library committee.

b) Annual Report

Twenty-two of twenty-four teachers college libraries in Karnataka do not prepare an annual report. Two libraries do prepare an annual report although they were not available to the investigator.

Facilities

Sixteen out of twenty-four teachers college libraries in Karnataka are housed in a hall, five are located in a room, two are housed in a separate building, and one library occupies a hall and a room. Table 17 gives details of space available for teachers college libraries in Karnataka.

Eleven teachers college libraries (50%) occupy space less than 800 square feet. Seven of them less than 500 square feet. Table 18 indicates the seating capacity of twenty-two teachers college libraries.

Librarians of several teachers colleges visited by the investigator said that the space they had was neither adequate nor comfortable. A considerable number of teachers college libraries have less than 500 square feet. Such limited space is completely inadequate to provide library service. Three teachers college libraries do not have enough space to accommodate twenty students at a time.

TABLE 17

PHYSICAL SPACE:

Area in square feet	Number of teachers college libraries
less than 299	1
300 - 399	2
400 - 499	4
500 - 599	2
600 - 699	1
700 - 799	1
800 - 899	0
900 - 999	0
1,000 and over	11
	22

Budget

Seventeen teachers college libraries in Karnataka have provided information concerning their budget for the years 1972-73, and 1974-75; and eighteen of them have provided information concerning their budget for the year 1973-74. In all cases library budget does not include the salary of the staff. During 1974-75 ten teachers college libraries had a budget of less than Rs. 5, 000/- and five had a budget over Rs. 10, 000/- (see Table 19).

TABLE 18

SEATING CAPACITY: TEACHERS COLLEGE LIBRARIES

Number of persons can be seated at one time	Number of teachers college libraries
10 - 19	3
20 - 29	7
30 - 39	1
40 - 49	6
50 and over	5
	22

TABLE 19

BUDGET: TEACHERS COLLEGE LIBRARIES

Amount in rupees	Number of teachers college libraries 1972-73	1973-74	1974-75
less than 1,999	0	1	2
2,000 - 2,999	3	4	3
3,000 - 3,999	1	1	2
4,000 - 4,999	5	4	3
5,000 - 5,999	1	0	1
6,000 - 6,999	2	1	0
7,000 - 7,999	1	1	1
8,000 - 8,999	0	1	0
9,000 - 9,999	0	0	0
10,000 and over	2	4	5
	17	18	17

Library Budget (1974-75) in Terms of Percentage of College Budget

The budget of the teachers college as well as that of the college library both for the year 1974-75 was provided by twelve institutions. Table 20 gives the budget of the college library as a percentage of the college budget. 8.10% happens to be the highest percentage, while the lowest is 0.35.

TABLE 20

LIBRARY BUDGET AS PERCENTAGE OF TOTAL COLLEGE BUDGET: TEACHERS COLLEGES

College budget 1974-75	College library budget, 1974-75	Library budget as percentage of total college budget
150,000	5,000	3.30
149,210	2,500	1.60
415,300	3,700	0.88
122,500	2,500	2.10
223,126	10,000	4.40
140,000	500	0.35
78,000	2,000	2.50
184,911	15,000	8.10
2240,000	20,000	0.89
138,000	10,000	7.10
153,000	8,000	5.30
145,000	3,000	2.10

Although the Education Commission (1964-66) recommends 6.5 to 10 per cent of the budget of an academic institution for the purpose of its library, only two teachers colleges have actually done so in Karnataka [2]. During 1974-75 more than half of the teachers colleges that have provided the requested information had a budget of Rs.5,000/- which is inadequate.

Library and Reading Room Fee

The universities in the State of Karnataka and the State Government have made provision for the collection of a library and reading room fee from students in case of teachers colleges. Twelve colleges (50%) do collect the fee in varying amounts. (Table 21). The amount collected as the library and reading room fee is to be spent for the purposes of purchasing books and to subscribe for periodicals and newspapers. However, twelve teachers colleges (50%) do not make use of this opportunity. The reason as indicated by D.R. Murughendrappa [3] in a personal interview is that the amount collected is considered as a source of income of the college by the state government for the purpose of calculating grant-in-aid to the college. Hence, the colleges are not enthusiastic in collecting the library and reading room fee although there is provision for it.

TABLE 21

LIBRARY AND READING ROOM FEE COLLECTED: TEACHERS COLLEGE LIBRARIES

Amount in rupees	Number of colleges	Per Cent
2.00	4	33
5.00	2	17
6.00	1	8
10.00	3	25
20.00	2	17
	12	100

Use of the Library

Librarians of twenty-two Teachers Colleges out of twenty-four, answering the question, "Is your library well used?" replied "yes". Two felt that the library was not well used. Librarians of twenty teachers colleges said that the best indication of the use of the library is the circulation register. Number of books borrowed and the number of readers that visited the library are positive indications of the use made of the library. Some librarians identified other "indications" of library use by the faculty and/or students as follows:

Reference questions received
Demand for more copies of textbooks
Demand for longer hours of opening
Faculty participation in book selection
Improved results at the public examinations
Students expressing appreciation of library services
Appreciative remarks concerning the library service in the annual report of the college
The presence of students in the library when they have no classes

The librarian of one college said that he did not have any indications from the faculty or students that they are making significant use of the library.

Conclusions

The objectives of teachers college libraries in the State of Karnataka are worthy ones and are in the realm of possible achievement. The principals of the colleges and the librarians consider the library as an essential part of the college. Every one concerned realizes the importance of a good library for the teachers college which prepares teachers for secondary schools in Karnataka. No one speaks of the library as "an ornament" of the college. However, reality the teachers college libraries in Karnataka are in poor shape. Twelve teachers college libraries (fifty per cent of the teacher college libraries) that have provided the requested information have a total book collection which is less than 5,000 volumes (Table 1). Ten teachers college libraries have less than 3,000 volumes in Education (Table 2). Ten teachers college libraries have less than 3,000 volumes in English (Table 3). However, in 1972 India alone produced over 14,000 books [4] more than half of them in English, including 366 books and 40 pamphlets in Education [5] of which 381 were first editions [6], 274 secondary school text books [7], 54 children's books [8], 5,728 books in social sciences including books in Education [9]. Inadequacy of teachers college library collections has to be evaluated in the light of this knowledge. Ten libraries have less than 300 volumes in reference collection (Table 6). A unique function of a teachers college library is the provision of secondary school text books essential for the use of teacher trainees in their lesson planning. A majority of teachers colleges have less than 200 volumes in their secondary school text book collection, while four teachers college libraries have none. (Table 7)

Although periodicals are an indispensable source of information, as many as ten teachers college libraries subscribe to less than twenty periodical titles and less than ten periodical titles in Education (Table 8). A large majority of them do not subscribe to any abstracting/indexing journal in Education although, according to Ulrich's International Periodicals Directory, Fifteenth Edition 1973-74, over forty periodical titles including abstracting/indexing journals are published in the field of Education in India alone.

A majority of teachers college libraries have a book catalog which is not up-to-date and not available for the use of students. Three teachers college libraries have no catalog of any kind and have not classified library collection according to any system. Five teachers college libraries are managed by clerks with neither college nor professional education. Seven librarians (29%) have no college degree (Table 11). Nearly half of the teachers college librarians in the state of Karnataka are getting a pay scale of a clerk who is not required to have college education (Table 14). Sixteen teachers college libraries do not have any support staff and are one man libraries. A large majority of teachers colleges in the state do not provide services such as preparation of abstracts, bibliographic service, indexing periodicals, interlibrary loans etc., and only circulate books. Eleven teachers college libraries occupy space less than 800 square feet while seven of them have less than 500 square feet inadequate even to house the collection let alone providing space for patrons (Table 17). Ten teachers college libraries had a budget less than Rs. 5,000/- during 1974-75; five of them less than Rs. 3,000/- which is inadequate.

The teachers college libraries are poor in their collections, poor in staff, poor in services, do not have congenial quarters and their budgets are most minimal. Professor Raghavachar [10] spoke rather candidly and declared that he saw no use from the library of his college as long as it continued to be what it is now. He would rather not have it, although he is aware of the great potential use of the library.

Commenting on "equipment and other facilities of teachers colleges and departments of education" the Review Committee on Education of the University Grants Commission [11] observes:

> Generally the libraries of teachers colleges/departments of education are poorly equipped. There is a lamentable lack of reference books and journals, documentation materials, research tools, e.g., tests, rating scales, etc., without which no educational research worth the name can be conducted. Some libraries do not have even standard professional books, to say nothing of literature from other cognate disciplines.
>
> Provision of a good library should be regarded as indispensable for raising the standard of professional preparation and research in post-graduate institutions. This would naturally require considerably larger financial resources than are at present available to most institutions.

Again, the Working Group appointed by the Education Commission (1964-66) to suggest a model syllabus for B.Ed. degree programs in India [12], commenting on teachers college libraries says: "A recent survey of colleges of education has shown that a number of teachers colleges have poor libraries with a small number of books and periodicals and an ineffective library service." A.C. Devagowda who surveyed Teachers Colleges in Karnataka during 1967 has this to say of teachers college libraries [13]:

> The average number of professional books on education in the thirteen training colleges is 2,265, the range being 380 to 8029. Well established training colleges like those at Mysore, and Belgaum have 4,000 - 8,000 professional books but some of the newly established colleges like the Sharada Vilas Training College at Mysore and the National College of Education at Shimoga are seriously short of library books. The amount spent each year on the purchase of new books also varies

> considerably. The Government and the University Colleges are provided more liberally than private colleges in this regard. In some colleges clerks are serving as part time librarian on a part-time basis. Only six colleges have reported that they have trained, full time librarian. Open access system is being followed only by a few colleges.

M.N. Radhakrishna who surveyed the facilities and conditions of Teachers College Libraries located in Bangalore and Mysore declares them inadequate to meet the demands of students and reminds the teachers colleges that they are failing in an important duty if they do not take steps to upgrade library services [14].

Attempts have been made to make the teachers college library more effective in several ways by individual librarians. For example, in R.V. Teachers College Bangalore the students are obliged to spend two hours per week in the library and write a brief note about the book or periodical article they happen to read at that time. Some of the teachers of the college are available in the library to provide guidance in selection of material and to give general suggestions. This has proved to be useful to the students. This library is doing something out of the ordinary because of the interest evinced by the principal and the faculty of the college. Such efforts are exceptions rather than the rule.

There are various reasons for the present state of affairs of the teachers college libraries. An important reason is the absence of a set of standards, which could guide and shape the policies and functions of these institutions. Lack of positive guidelines in the "affiliation" rules for the functioning of teachers college libraries and a similar absence of guidance from the grant-in-aid rules of the state government have precipitated the present situation. Students and teachers of various types of academic institutions in the area are not exposed to good library service; therefore, they do not demand anything better than what they have. Being unaware of the potential use of the library, they are complacent. Hence it is of great importance that professional leadership in the state take the lead and provide necessary environment for the growth of efficient library services and thus create an awareness among library patrons of what they can expect from a modern library.

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A STUDY OF THE PROGRESSIVE USE OF THE INDICATOR DIGIT DEVICE IN COLON CLASSIFICATION

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The evolution of the concept of 'Indicator Digit' and its use in the different editions of the Colon Classification are closely studied. Its use in other schemes of classification and the definitions available at various sources have also been studied.

0. Introduction

The concept of 'Indicator Digit' as it is understood today has evolved through several stages. The definitional parameters of this concept represented by various terms such as Division Figure; Auxiliary Number; Connecting Apparatus; Connecting Symbol; Conjunction; Sign Post; Fence; Signal Digit; Seperating Digit; Facet Indicator; Operator; Connector; etc. have undergone a change with successive refinements in the general theory of library classification.

A Faceted classification like Colon does not provide ready made numbers for Compound or Complex subjects. They only give schedule of special isolates belonging to different Fundamental Categories going with Basic Classes and schedules of common isolates and schedules of speciators which can be attached to any host class or subject. These schedules correspond to the standard components of prefabricated instant houses and the function of Indicator digits in a faceted classification is like bolts, nuts, nails and rivets which join the requisite components of an instant house.

With the help of indicator digits, in an assigned combination and permutation (the assignment is done with the help of Postulates and Principles of Facet Sequence) "the isolates from different schedules are assembled in a different way so as to yield distinct class number for each of a variety of Compound Subjects [or Complex Subjects]" [1].

Growth and development of the concept of 'Indicator Digit Device' as it stands today in the context of the general theory of library classification is very much linked with the use of 'Indicator Digits' in different stages of development of faceted classifications. Hence it may be desirable to examine the various stages of the development of indicator digits in the context of faceted classifications to have a proper comprehension of the concept 'Indicator Digit Device'.

1. Historical Background

Genesis of the concept 'Indicator Digit Device' defined by the current general theory of classification may be traced in the pragmatic approach of Melvil Dewey and his use of zero and double zero in Dewey Decimal Classification for connecting form divisions with a class number with the help of a division figure. Melvil Dewey while writing about the use of form divisions in the introduction to "Decimal Classification, Ed. 11; 1922" stated:

> "The Classification is mainly by subject or content regardless of form but an added form distinction for jeneral treatises is found practically useful. Thus, in Syence there are many compends, dictionaries, essays, periodicals and socyeties, treating of Syence in jeneral, and so having "0" for the division figure, but treating it under different forms, and therefore divided into sections according to this form: 501 for filosofy or theories of Syence, 502 for compends, 503 for dictionaries. This treatment is as nearly as practicable, uniform in all classes. Creasy's 15 decisiv battles is 904 the 1st figure being 9 becauz the book is clearly history; the 2nd figure 0, becauz limited to no division class 9; and the 3rd figure 4, becauz the book is a collection of essays.....
>
> Form divisions always have the same set of numbers preceded by 0, viz; 1. filosofy theories etc; 2. compends, outlines; 3. dictionaries, cyclopedias; 4. essays, lectures, letter etc.; 5. periodicals, magazines etc.; 6. socyeties, associations, transactions, report etc.; 7. education, study, teaching, training etc.; 8. poligrafy, collections etc.; 9. history. Thus a periodical on a subject has the subject number followed by 05; e.g. a periodical on public health; 614.05. But if the

number already ends in 0, 0 is not repeated before form-division figures; e.g. zoolojic magazine is 590.5, not 590.05" [2].

Thus we find that the appearance of 'Zero' in a DC number usually means that the subject represented by preceding digits is now divided by the principle (i.e. characteristics of division) form of presentation; so as 821.09 means the subject English poetry, indicated by number 821, represented in the form of history indicated by number 09.

We also find that Dewey though made use of 'Zero' to indicate change in characteristic of division, yet gave no clear cut explanation or theoretical justification for its use. The role of indicator digits for indicating the division of a given subject by more than one characteristics is theoretically first conceived and implemented by UDC. UDC extended the 'synthentic/mnemonic device' of DC and made use of other distinctive signs called 'auxiliary numbers'. It provided a set of auxiliary tables each one of which could be connected by an appropriate non-numerical symbol with the main subject. These symbols serve to express the fine distinction of a subject, as regard, its relation with other subject; its situation (i.e. place and time) as well as form and language of the document. The function of these auxiliary numbers of UDC can be well explained with the help of the following Table 'A' reproduced from the classification Decimale Universele 1927-1929" [3]

TABLE 'A'

			L'IDEE (contenu)						
			Idea (contents)						
LE SUJET		SES RAPPORTS AVEC AUTRE SUJET				SA SITUATION		LE DOCUMENT LE CONTENANT	
Subject		Its relation with other subject				Its situation		Container or Package	
Classes	Individus	Addition	Analyse	Points de vue	Relation	Lieu	Temps	Forme	Langue
	Individuals		Analysis	Point of view		Place	Time	Form	Language
0/9 ou(0/9)	A - Z	+	-ou..	...00		( )	" "	(0)	= . =
		Plus	hyphen and zero	double zero	Colon	Bracket	Inverted Comma	Bracketed zero	Equal to

Tracing the history of development of classificatory notation B. C. Vickery states; "Though presaged by the 'common subdivisions' of Dewey and Cutter (developed later in the 'categorical tables' of Duff Brown), it is only in the Manuel du repertoire bibliographique universal of Otlet and La Fontaine in 1896 that 'composite classification' made real advance. Their U.D.C. provided, as is well known, an extensive set of auxiliary tables covering language, literary form, location, era, and point of view, each term in which could be linked by an appropriate symbol to the term denoting the main subject. Thus we get 225=40 for the New Testament in French; 58(021) for Botany, a handbook; 347.77(492) for Patent Law, Dutch; 54 '18' for Chemistry, ninteenth century; and 667.46.003 for Artificial Silk industry, from the economic point of view.

The U.D.C. also provided a second device, the colon, for linking any two or more subject classes together to form a new specific subject, thus 31:63 for Statistics, agricultural. A third new feature of the U.D.C. was the introduction of 'analytical subdivisions' applicable to a particular subject class, 532.71.07 stands for Osmosis, apparatus.

This last method was the beginning of 'cross-classification', whereby one and the same group of concepts is subdivided according to more than one point of view [4].

Ranganathan in his 'Colon Classification,Edition 1, 1933" further developed the techniques of faceted classification by introducing 'Colon Device' and 'Bias Number Device'. He made use of the digits: (colon) and 0 (zero) to act as a "connecting apparatus" [5] of the respective devices. The Colon Device consisted in "separating, by a colon, the parts of a Class Number, which relate to the different characteristics forming the basis of classification" [6] and "the Bias Number Device is employed for bringing together such of the books in a class as are written with a special bias to some other class or from a special point of view that can be associated with some other class, or for the use of special class of readers whose primary interest of study is in some other class, or as have some other special relation to some other class" [7].

Writing about the tactics of colon notation and influence of the Dewey on its notational techniques Ranganathan states: "It [CC] has accepted all the fruits of the poineering enterprise of Dewey. It has unquestioningly adopted the Decimal Fraction Notation Principle in designing its notation. It studied the forces that overpowered the Decimal Classification and the occasional, isolated moves Dewey took by stroke of sheer genius to meet them in some situations. It explored why he was unable to continue them in all similar situations. By this process it found the necessary allies for the Decimal Fraction Notation in the principles of Phase-and Facet-Analysis - not altogether new but, as already shown, found in an incipient, nebulous form in the later editions of the Decimal Classification. It was found that what stood in the way of Dewey fully exploiting these principles was something inherently lacking in his notation...

The failure to exploit the Principle of Facet-Analysis to make a closer approach to coextensiveness was due to the absence of designing a special connecting symbol to attach one Facet to another. This defect was removed by the invention of ":" as an ordinal number lying between 0 and 1 and using it as the Connecting Symbol" [8].

Ranganathan not only adopted notational techniques of DC, but seems to have also been influenced by the notational techniques employed by the UDC! Before the coming of CC, as can be seen in Table 'A' referred to above, UDC used varieties of connecting symbols to attach associative concepts with already enumerated subjects and to further sharpen them to formulate new compound or complex classes. Thus it may be said that the Colon Device and Bias Number Device of CC appears to be parrallel development in the use of Non-Numerical symbols in U.D.C.:

a) to show the relation of one subject with another;

b) to indicate its situation in time and space; and

c) to represent features of the container or package (i.e. book, qua book) apart from the 'intrinsic contents of ideas' or the 'knowledge unit' embodied in the document.

U.D.C's situation of the subject viz. time and place, becomes Ranganathan's Time and Space Fundamental categories, the use of symbols to attach associative concept becomes 'Colon Device of CC, and UDC's 'documents form numbers' and 'Language number' becomes 'Common Subdivision Numbers' and "Language Numbers" (forming part of Book Number) respectively, of CC.

Though Ranganathan gave theoretical base to the concept of 'Faceted Classification' and exploited the idea of 'connecting symbols', found in an incipient form in DC, yet we find that inspite of the fact that UDC has been using it prior to the CC with different symbols to indicate different facets, he made use of a single symbol : (colon) to indicate different facets in CC's first edition. It is only from the fourth edition of CC that he made use of this technique which was inheretently lacking in CC. Writing about the notational apparatus of Ranganathan prior to fourth edition and use of new indicator digits in the fourt edition, B.C. Vickery in his article 'Notational Symbols in Classification' states:

> "The colons (upto third edition) have a function somewhat analogous to that of the connecting symbols encountered in the U.D.C.: they also are semantically empty, serving only to end one section or 'facet' of the composite symbol and introduce the next. They are, if this is logically possible, even emptier than the UDC symbols. They do not even serve as signposts specifying the category of the following symbol, they are simply fences erected between successive amalgamanting symbols...
>
> Fences are rigid things, and it is no surprise that in his attempts to 'break rigidity' Ranganathan has done away with them. Each facet in his classification is now introduced by its own distinctive signpost. Five fundamental categories are recognised, called by Ranganathan time, space, energy, matter and personality, introduced respectively by a full-stop (the first two), colon, semicolon, and comma. Though the use which Ranganathan makes of this group of symbols differs considerably from the auxiliary tables of the UDC the nature of the symbols in each case is the same; rigid order of citation is no longer needed, and vacant facets do not have to be signalized by a series of 'fences'." [9]

2. Progressive use of indicator digits in CC

The development in the use of indicator digits in the Colon Classification since the coming of the first edition, can be best traced with the help of Tale B given in the next page.

3.1 Connecting Digits in Edition 1 (1933)

Examining the step by step progress of the Colon Classification since its inception, we find that the distinctive feature of first edition (1933) of CC was that unlike the other schemes of classification in vogue during that period, it did not assign ready made class numbers to subjects. Instead, it provided different Standard Unit Schedules [10] for a set of Main Subjects. By picking out a particular Main Subject Number and desired isolate number from the different

TABLE 'B':

Choronological Table Showing the use of Indicator Digits in Various Editions of Colon Classification

Edition	Symbols used	Used as	Their ordinal value in relation to other digits used in the primary base of the notational system of CC
1	2	3	4
		Connecting apparatus for	a b c d e f g h i j k l m n o p q r s t u v w x y z 0 : 1 2 3 4 5 6 7 8 9 A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
1st, 1933	0(zero)	Bias Number Device	
	: (colon)	Colon Device	
		Connecting apparatus for	a b c d e f g h i j k l m n o p q r s t u v w x y z 0 : - 1 2 3 4 5 6 7 8 9 A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
2nd. 1939	0(zero)	Bias Number Device	
	:(colon)	Colon Device	
	- (dash)	Auto-Bias Device	
		Connecting symbol for	
3rd. 1950	0(zero) ..c(dot c) . d(dot d) ..e(dot e) : (Colon)	Biasing phase Comparison phase Influence phase Relation phase (a) Connecting the parts of a class number which belong to two consecutive facets (b) Tool phase/ Aspect phase	a b c d e f g h k l m n p q r s t u v w x y z 0 . : - 1 2 3 4 5 6 7 8 9 A B C D E F G H I K K L M Δ N O P Q R S T U V W X Y Z
	:9(Colon 9)	Tool phase/Aspect phase.	
	-(dash)	Auto - Bias Device	
		Connecting symbols for	
4th. 1952	← (Backward Arrow)	To indicate interval of time	a b c d e f g h j k l m n p q r s t u v w x y z ← → 0 . : ; , - 1 2 3 4 5 6 7 8 9 A β B Γ C D E F G H I J K L λ M Δ μ N O P Q R S Σ T U V W X Y Z.
	→ (Forward Arrow)	Indicating future time	
	0(zero) 0c(zero c) 0d(zero d) 0f(zero f) . (dot : (Colon)	Biasing phase Comparison phase Influencing phase Relation phase Time & space Facet Energy Facet, Tool phase and aspect phase	
	; (semi colon) , (Comma) -(hyphen)	Matter Facet Personality Facet Auto-Bias Device	

Note: Backward arrow (←) was endowed with anterorising value

1	2	3	4
		Connecting symbols for	
5th. 1957	← (Backward arrow)	To indicate interval of time	(← → 0 . : ; , - a b c d e f g h j k l m n p q r s t u v w x y z 1 2 3 4 5 6 7 8 9 A β B Γ C D E F G H η I J K L λ M μ Δ ν N O P Q R S Σ T U V E X Y Z)
	→ (Forward arrow)	Indicating future time	
	0(zero)	Phase and Intra-facet Relation.	
	. (dot	Time & space Facet	
	: (colon)	Energy Facet	
	; (semi-colon)	Matter Facet	
	, (comma)	Personality Facet	
	-(hyphen)	(a) Auto-Bias Device (b) Favoured Focus Isolate	

Note: In addition to '0' (zero) the following digits are used in indicate different types of phase relations:-

Phase Relation	Intra-Facet Relation	Type
a	j	General
b	k	Bias
c	m	Comparison
d	n	difference
g	r	influencing

		Connecting symbols for	
6th. 1960 **6th. Rev. 1963	← (Backward arrow)	To indicate interval of time	(← → 0 ' . : ; , - a b c d e f g h j k l m n p q r s t u v w x y z 1 2 3 4 5 6 7 8 9 A B C D E F G H I J K L Δ N O P Q R S T U V W X Y Z)
	→ (Forward arrow)	indicating future time	
	0(zero)*	Phase, Intra-Facet and Intra-Array Relation	
	'(Inverted Comma)	Time Facet	
	. (dot)	Space Facet	
	; (Colon)	Energy Facet	
	; (Semi colon)	Matter Facet	
	, (Comma)	Personality Facet	
	-(Hyphen)	(a) Auto-Bias Device (b) Favoured Focus Isolate	

*Note: In addition to zero the following digits are used to indicate different types of Phase, Intra-Facet and Intra-Array Relation:

Intra-Array Relation	Intra-Facet Relation	Phase Relation	Type
t	j	a	General
u	k	b	Bias
v	m	c	Comparison
w	n	d	Difference
y	r	g	Influencing

**2) Single inverted comma was introduced in 6th Rev. Edition to indicate Time Facet.
3) Greek letters except Δ were dropped in the 6th rev. edition from the primary base.

1	2	3	4
		Indicator Digits	
7th.	*(Asterisk)	To indicate Agglomerates formation or interpolation	* ← " & ' . : ; , - = + → a b c d e f g h j k m n p q r s t u v w x y z 0 1 2 3 4 5 6 7 8 9 A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
	← Backward arrow)	To indicate range of time	
	"(Double inverted Comma)	To indicate Common Isolate Facet (Referral document)	
	&(Ampersand)	To indicate Phase Relation Facet	
	'(Single inverted comma)	To indicate Time Facet	
	. (dot)	To indicate Space (=S) Facet	
	: (Colon)	To indicate Energy (=E) Facet	
	; (Semi Colon)	To indicate Mater (=M) Facet	
	,(Comma)	To indicate Personality (=P) Facet	
	- (Hyphen)	To indicate speciator kind 1(Conventional speciator) i.e. to indicate second or later constituent of Compound Isolate/Compound Basic Subject).	
	=(Equal to)	To indicate speciator kind 2(Non-conventional speciator or special component kind 2)	
	+(Plus)	To indicate second or later component of a multinominal while applying alphabetical device.	
	→ (Forward arrow)	To indicate future time.	

Note: 1) The digits * ← " are endowed with anteriorising place value.
2) The following type of digits are used to indicate different level and types of phase relations.

Intra-Array	Intra-Schedule	Inter Subject	Levels/Varieties
t	j	a	General
u	k	b	Bias
v	m	c	Comparison
w	n	e	Difference Tool/Application
y	r	f	Influencing

standard unit schedules of isolates and combining them with the help of connecting symbols in the assigned manner the class number for all possible subjects could be constructed. Its 'connecting apparatus' consisted of the indicator digits : (colon) and 0 (zero). With the help of : a class number for a compound subject could be formed and with the help of 0 a class number for 'Complex Subject' could be formed.

3.2 Connecting Digits in Edition 2 (1939)

In the second edition (1939) the digit - (dash) was added into the stock of CC's indicator digits. This digit was used for combining two or more class numbers (i.e. isolate numbers) taken from one and the same 'Standard Unit Schedule' and this method was known as 'Auto-Bias Device' [11]. It may also be stated that later in the Sixth Edition of CC (1960), this technique was given the name of super-imposition device by Ranganathan. The device consisted in connecting the numbers of constituent isolates belonging to a schedule by a '-' (dash) and the resulting number was called super imposed number. Recently, because of the progress made by Ranganathan towards the clarification and establishment of precise terminology of his theory of classification (the new version of this terminology is being incorporated in the forthcoming seventh edition of CC), the super imposition device has been named as 'Speciator Device' [12].

Speciator being "an idea or idea complex used or intended to be used as a qualifier going with a host Basic Subject or a host Isolate Idea" [13]. When such a speciator is connected with a Basic Subject a kind of non-primary basic subject namely 'Compound Basic Subject' is formed; and when it is connected with an Isolate Idea a 'Compound Isolate Idea' is formed. So far 'Speciator kind 1' and 'Speciator kind 2' have been recognised and Speciator Device at notational level consists in using the indicator digits - (hyphen) and = (equal to) signs for connecting speciator kind 1 and kind 2 respectively. In addition to indicator digit = (equal to) Prof. Neelameghan has suggested that the "Position Fixers a, b, c, d, . . x, be used with speciator kind 2 in order to secure a relatively helpful sequence among compound subjects containing compound space isolates with two or more speciators of kind 2 combined successively" [14].

3.3 Connecting Digits in Edition 3 (1950)

By the time the third edition of CC was published in 1950, Ranganathan had changed his views about the concept of 'Bias Number Device' and introduced the term 'Phase Relation' to represent the new evolved concept. Five types of phase relations namely - Biasing Phase, Comparison Phase, Influence Phase, Relation Phase, and Tool/Application phase were recognised [15]. Accordingly, lower case indicator digits o, c, d, e and : or :9 were fixed to indicate the respective phases in the third edition of CC. It may be observed that at this stage, the substantive digits, which were used only to represent concepts/ideas in CC, are also used to fulfil the function of conneceting digits or position fixers of different phase relations.

After the third edition of CC, Ranganathan brought progressive refinements in the concepts of phase relation as well as in the use of indicator digits to represent them. Currently the concept of Phase Relation is defined as a relation of least bond/loose assembge between two or more Basic and/or Compound subjects forming the components of a 'Complex Subject'. Varieties of Phase Relations namely - (a) General Phase Relation, (b) Bias Phase Relation, (c) Comparison Phase Relation, (d) Difference Phase Relation, (e) Tool Phase Relation, (f) Influence Phase Relation and also three levels of them viz., (i) Inter-Subject level, (ii) Intra-Schedule level, and (iii) Inter-Array Level have been recognised [16]. The indicator digit for Phase Relation and 'Position Fixers' for various varieties and levels of phase relations proposed for the seventh edition of CC are given in the Table 'B' above.

3.4 Connecting Digits in Edition 4 (1952)

In the fourth edition of CC (1952) Ranganathan brought forward some significant and radical changes in the use of Indicator digits. The Fourth edition is considered by him as the beginning of the era of 'Colon Classification Version 2' and which ends with the reprint of edition six (with annexure) of CC in 1963. According to him, at this stage CC becomes an 'Almost Freely Faceted' Classification from the 'Rigidly Faceted' classification of earlier versions (i.e. Ed. 1 to Ed. 3), because of "its uses of different indicator digits for diverse kinds of Facets".

Prior to fourth edition the rules of CC prescribed that even when an intermediate facet/s, in a specific subject do not occur, the connecting symbol should be inserted to represent these vacant (absent) facets. As a result of this rule, when : (colon) was used as the only connecting digit for all facets a cluster of two or more colons used to occur whenever intermediate facets were absent in a subject as shown in the following examples:

(1)	D66 : : : 4	Designing in Electrical Engineering
(2)	D66 : 121 : : 4	Design of Electrical generator
(3)	D66 : 121 : 2 : 4	Design of coils of copper wire of Electrical Generator

In example 1, two intermediate facets were absent, namely, Secondary Work Facet and Part Work Facet (we are using the term used till 1950). Therefore, three colons occur consecutively in the class number.

In example 2 above, the Part Facet is absent. Therefore two colons occur consecutively in the class number.

In the example 3, no intermediate facet is absent. Therefore there is no cluttering of colons" [18].

In order to avoid such consecutive occurrence of colon in a class number, which was considered as an irritating phenomenon, Ranganathan on the suggestion of S. Parthasarathy proposed in his series of articles entitled Optional facets in Library Classification [19], to have the following connecting symbols to indicate 'Five Fundamental Elements' (now termed as Five Fundamental Categories).

Facet	Connecting Symbols
Time	. (Full stop)
Space	. (Full stop)
Energy	: (Colon)
Matter	; (Semi Colon)
Personality	, (Comma)

It may be pointed out that the concept of 'Fundamental Categories' was conceived by Ranganathan prior to his proposals for having different connecting symbols for different Fundamental Categories.

This concept was first enunciated by him some time in 1942 and later explained in his book Library Classification Fundamental and Procedure [20]. Giving the background of this concept, which was later incorporated by him in the fourth edition of CC, he states: "As a first step the Five Fundamental Categories were postulated in 1942. In 1949, different connecting symbols were postulated for different fundamental cateogries. Thus, the [concept] connecting symbol was invested with the additional power to indicate the nature of the facet following it. This additional indicator function of the connecting symbol eliminated cluttering of connecting symbols" [21]. Further the justification for using the same symbol for representing both space and time facets was given by S. Parthasarathy in one of his articles in the following words:" The use of the same connecting symbol for representing both space and time facets does not cause any ambiguity because space facet begins with Arabic numerals and time facet with alphabets". [22].

In the fourth edition of CC Ranganathan not only incorporated different connecting symbols for facets belonging to different fundamental categories (except in the case of time and space) but also added to the stock of indicator digits the symbols ← (Backward arrow) and → (Forward Arrow) to indicate interval of time and future time respectively.

The digit ← (backward arrow) was also equipped with 'anteriorising value' along with Roman small letters and its ordinal value was fixed to be greater than that of Roman small letter 'z' according to the rule number 0251 and 025 respectively [22A]. However, Ranganathan later changed his opinion, with regard, to the place value of digit (backward arrow) and suggested that "among the digits with anteriorising value its ordinal value should be least [23]. Thus, it can be said the importance of the fourth edition of CC lies not only in the maiden use of different digits for indicating different facets (except in the case of time and space) but also in the use of "Anteriorising Indicator digits" in CC.

3.5 Indicator Digits in Edition 5 (1957)

In the fifth edition of Colon Classification Ranganathan introduced another level of Phase Relation namely 'Intra-Facet Relation'. This relation is defined "as relation between two (or more) isolates in one and the same facet (schedule)" [24] and the isolate thus formed is called 'Complex Isolate'.

As in earlier editions the digit 0 (zero) is used to indicate phase relation between two or more subjects and the Roman small letters, as shown in the Table 'B' above, are used to represent different kinds of Inter-subject and Intra-Facet relation.

In this edition a new category of digits, namely, 'Circular Brackets' were also introduced. These digits are used to enclose the number formed with the help of Subject Device. The function of the circular brackets being to give the status of single digited isolate number to all the digits including indicator digits enclosed in circular brackets. The digit or digits which are enclosed in brackets generaly stand for a class number of a subject which is taken as characteristics for forming or sharpening a facet or an isolate idea. The practice of enclosing the number formed with the help of Subject Device was introduced by Ranganathan to avoid "homonyms in class numbers" [25] and was given the name of 'Packet Number Device' [26].

The ordinal value of '('(starter bracket) was fixed to be greater than that of capital letter 'Z' and ordinal value of the ')' (arrester bracket) was fixed less than that of ← (backward arrow) [27].

Though in the fifth edition Ranganathan for the first time explicity divided the digits used in CC into two groups namely (a) "Substantive digits", (b) "Connecting digits" [28], yet he did not put circular brackets in either of the categories.

As the function of these digits is neither to represent any idea nor to play the role of Empty digits, it can be unequivocally said that these digits do not belong to the set of substantive digits.

But keeping in view their function, viz., to indicate that the number enclosed within these digits has been formed with the help of subject device, these can be categorized as 'Indicator Digits.

Further we find that Ranganathan fixed the ordinal value of the digit ')' (arrester), which is a non-anteriorising digit less than that of ← (backward arrow) which is an anteriorising digit. This anomaly, however, has been removed in the later edition of CC.

3.6 Indicator Digits in Edition 6 (1960) and 6th Rev Edition (1963)

In the sixth edition (1960) Ranganathan introduced the third level of 'Phase Relation' namely 'Intra-Array Relation' [29] and used distinctive Roman small letter to indicate different varieties of 'Intra-Array Relations'.

The notable landmark in the sixth revised edition (1963) is the use of digit (') (single inverted comma) to indicate Time Facet [30]. The ordinal value of this indicator digit is fixed less than that of (.) (dot), an indicator digit for Space Facet.

3.7 Indicator Digits in Edition 7 (Forthcoming)

The notational system of the forthcoming seventh edition of Colon Classification will consist of the following set of primary digits.

(a) 23 Roman Small Letters.
(a.......z excluding i, l, o)

(b) 10 Indo-Arabic Numerals
(0......9)

(c) 26 Roman Capital Letters
(A.......Z)

(d) 14 other characters namely: Asterisk, Backward Arrow, Double inverted comma; Parenthesis; Ampersand; Single inverted comma; Dot; Colon; Semi Colon; Comma; Dash; Equal to; Plus; Forward Arrow:
* ← " () & ' . : ; , - = + →

(Note: The term primary digit is defined as a set of digits which constitute basic elements of a notational system with the help of which

(a) the primary base of the notational system can be extended, and

(b) its complex constituents (viz. class numbers) are formed).

The set of primary digits get divided into the following disjoint sub-sets, with respect to their sequential characteristics.

(a) A sub-set of Anteriorising Digits consisting of digits {* ← " }

(b) A sub-set of Non-Anteriorising Digits
{(& ' . : ; , - = +) a.....z A...Z }

(c) A sub-set of Posteriorising digits
{Digits under consideration}

(Note: In order to meet the demand of Principle of Extending the primary base at any point, Bhattacharyya has suggested the introduction of posteriorising digits) [31].

The digit belonging to the primary base of the notational system of CC play one or more of the following varieties of roles besides the sequential role.

(a) Role of Significant digits.
(b) Role of Empty digits.
(c) Role of Sectorising digits.
(d) Role of Empty & Emptying digits.
(e) Role of Emptying digits.
(f) Role of Indicator digits.

The following digits have been deemed to play exclusively the role of Indicator digits in the seventh edition of CC [32], [33], [34], and [35].

* ← " (& ' . : ; , - = + →)

These digits are further divided into the following two categories according to their sequential characteristics:

(1) Anteriorising Indicator Digits [33, 34]
* ← "

(2) Non-Anteriorising Indicator Digits
(& ' . : ; , - = + →)

The changes and new innovations which are likely to be incorporated in the forthcoming seventh edition of Colon Classification vis-a-vis the use of indicator digits can be summarised as follows:

(1) The digit & (Ampersand) will be used as an indicator digit for Phase Relation in place of '0' (zero), which is released from the use as an indicator digit to function as an Empty digit for extending the primary base and is also given normal ordinal value at point prior to 1.

(2) A new indicator digit (") (double inverted comma) having anteriorising sequential value is added to release the Small Roman Letters from playing the role of anteriorising digits. The small Roman letters now constitute part of Non-Anteriorising Digits.

(3) When a multinomial term is represented by the Alphabetical Device, the abbreviation used to represent the component words (other than first word) of a multinomial term are indicated and connected with the digit + plus. Earlier = (equal to) digit was used for this purpose, which is now being used for indicating speciator of kind 2 [35].

(4) The digit '=' (equal to) is to be used for indicating speciator kind 2.

(5) The digit Asterisk '*' has been added to the set of Anteriorising Indicator Digits and its sequential value among the other digits has been fixed in the following order [36], [37]
* " ←

However the sequential value of the Anteriorising digits (") (inverted comma) and '←' (backward arrow), as shown above seems to be in contradiction to the earlier stand taken by Ranganathan [38].

According to the present suggested order a set of class numbers will get arranged in the sequence shown below:

V 56 'K03 "a
V 56 'K03 J58 "a
V 56 'K03 J58
V 56 'K03

Whereas, as per suggestion and justification given by Ranganathan earlier [37], the arrangement of the given class numbers should be in the order given below:

V 56 'K03 J58 "a
V 56 'K03 J58
V 56 'K03 "a
V 56 'K03

This fact was brought to the notice of DRTC (Bangalore) in a private correspondence by this author recently, and it has been agreed by the DRTC to refix the sequence of these digits in the following order * ← " .

4. Development of the Concept

Tracing the development of the concept 'Indicator Digit' we find that Ranganathan did not define the function of Indicator Digits in explicit terms either in the earlier three editions of Colon Classification or in his 'Prolegomena to library classification (1937)', the work in which he expounded his theory of library classification, evolved on the basis of experience gained by him while designing and working with the first edition of Colon Classification.

Ranganathan has himself accepted in one of his writings that when the Indicator Digit ':' (Colon) was introduced, ideas were not quite clear as to what exactly the function of the Indicator Digit was, although we now say it is a well defined term [39].

In the first edition of Colon Classification the role of the digits: (Colon) and 0 (zero), which he calls 'Connecting Apparatus' of Colon Classification, is described in the following words. "The Schedule in the Colon Classification may be said to consist of certain standard unit schedules. These standard unit schedules correspond to the standard pieces in a Meccano apparatus. Even a child knows, that, by combining these standard pieces in different ways, many different objects can be constructed. So also, by combining the classes in different unit schedules in assigned permutation and combinations, the class for all possible topics can be constructed. In this Scheme, the function of (:) is like that of the bolts and nuts in a Meccano Set" [40].

It was Vickery, Ramabhadran, Palmer and Wells, who in their various writings, during 1950's elaborated on the role of 'Indicator Digit' and defined the concept outside the context of any individual scheme of classification.

Palmer and Wells in their book 'Fundamental of Library Classification (1951)' for the first time used the term 'Indicator Digit', which came to stay in place of 'Connecting Digit' and the various terms used by others to represent the concept, and they difined the term in the following words: "Where a symbol is used to announce a change of method of division, it can be called an 'Indicator Digit' because it indicates a new method of division" [41].

Ramabhadran in his paper 'Role of connecting symbols [42] elaborately discussed the function of connecting symbols and isolated the following set of roles performed by these digits in a scheme of classification:

1) Role of avoiding incidence of homonyms in an analytico-synthetic scheme of classification.
2) Role of separating/connecting the isolates of one facet from/with that of the succeeding facet.
3) Role of indicating Fundamental Categories, Partial Comprehension (now called Agglomeration) and Phase Relationship.
4) Role of ordinal value for securing helpful sequence of books on the shelf.

Vickery used the term 'Signpost' and 'Fence' to represent the concept of Indicator Digit and defined these terms in the following words [43]:

Fence: A semantically empty symbol in a class number separating consecutive facets.

Signpost: A symbol whose function is to indicate the category of the following class number.

Thus it is found that due to the development of thought on notational system of classification brought forward during early 1950's by the Classification Research Group (London) and Group of persons working with Ranganathan in India, Ranganathan for the first time categorised the digits of the notational system of CC into two categories namely 'Substantive Digit' (having semantical value) and 'Connecting Digits' (indicating the nature of the connecting facet, but semantically poor) in the fifth edition (1957) of Colon Classification.

Scanning the later literature on the theory of library classification we find that hardly any change has been brought forward in the concept Indicator Digit, since defined in early 1950's. However Prof. Neelameghan in one of his recent articles has defined Indicator Digit as a digit that indicate the inter-relation between two component ideas of a subject [44]. His definition is differently worded than provided by Ranganathan in one of his recent article [45] and is more appropriate and up-to-date in the light of recent developments on the general theory of library classification.

5. Summary

Some conclusions can be drawn from the foregoing study relating to the development of the concept 'Indicator Digit' and the use of such digits in Colon Classification.

It is indicative that the notational system in Colon Classification, particularly in the first three editions, was primarily devised on a pragmatic approach and the theory of notation, formulated by the designer, has followed the practice. Thus it is found that the definitional parameter of the concept 'Connecting Symbol' is altered with increased experience in the use of the digits in the scheme, and with the explicit or clearer understanding of the concept, the more appropriate term 'Indicator Digit' is accepted to represent the concept in place of the term 'Connecting Symbol'.

According to the General Theory of Library Classification a notational system for a library classification constitute a set of primary digits, which are endowed with certain value/s or function/s to achieve the objective of the system; that is "to secure mechanically the respective ranks of the ideas of subjects represented by the numbers constructed according to its grammer" [46].

These primary digits of notational system perform one or more of the following functions:

1) Sequential function: To secure linear arrangement of subjects or idea components of a subject in preferred helpful order.

2) Semantical function: To denote each of the subject or idea components of a subject;

3) Relation Indication function: To indicate hierarchical, and co-ordinate interrelationship between or among subjects or idea components of a subject;and

4) Hospitality or Extension Function: To have built in mechanism to extend its primary base, to accomodate new ideas or subjects among existing one in an array as well as in a chain.

Examining the notational policy of Colon Classification it is found that the digits, which basically perform the 'Relation Indication Function' are termed as 'Indicator Digits'. These digits, besides the above function, also perform (a) Sequential Function, (b) Hospitality or Extension Function to accommodate idea in Chain and Array (when used as Facet Notation Device' and 'Agglomeration Notation Device). The only function these digits do not perform is semantical function.

Whereas, the so called 'Substantive Digits' perform all the functions listed above, including 'Relation Indication Function' as illustrated below:

For example, in the class number: LTK–(42).56, denoting the subject 'Japanese style of boxing in Great Britain', each of its constituent digits perform the functions mentioned against each:

L A substantive digit performing no semantical function as it has been deprived of its semantical value by the succeeding emptying digit 'T'.

T A substantive digit performing (a) hospitality/extension function by interpolation in array (By virtue of the value attached to it by 'Empty Digit Device'); (b) semantical function by denoting the primary basic idea: Physical Exericse & Sports, and (c) relation indication function by indicating that the Primary Basic Idea devoted by it is coordinate to the idea denoted by the preceeding digit 'L' in the array of first order (by virtue of 'Empty Digit Device').

K A substantive digit performing (a) semantical function denoting the Secondary Basic Idea: Boxing; (b) hospitality/extension function by extrapolation in Chain at idea level as well as at notational level (by virtue of Decimal Fraction Device); and (c) relation indication function by indicating that the Secondary Basic Idea devoted by it is sub-ordinate to that of Primary Basic Idea denoted by the digit 'T' (by virtue of the place value assigned to the respective digits by the Decimal Fraction Device).

(Dash) An Indicator digit performing (a) extension function by extropolation in chain at notational level (by virtue of 'Facet Notation Device)'; and (b) relation indication function by indicating that the idea represented by succeeding digit is speciator kind 2.

(42) A packeted number performing (a) semantical function denoting the idea 'Japanese Style'; and (b) relation indication function indicating that the number enclosed in the parentheses has been formed by 'Geographical Device'.

. (Dot) An indicator digit performing (a) hospitality/extension function by extrapolation in chain at notational level (by virtue of 'Facet Notation Device'); (b) relation indicator function by indicating that the ideas represented by the succeeding digits belongs to the space facet.

5 A substantive digit performing (a) semantical function denoting the isolate idea 'Europe'.

6 A substantive digit performing (a) semantical function denoting the idea 'Great Britain'; (b) extension function by extrapolation in chain at idea level as well as notational level (by virtue of 'Decimal Fraction Device'); and (c) relation indication function by indicating that the idea denoted by it is subordinate to the idea denoted by proceeding digit '5' (by virtue of the place value assigned to the respective digits by 'Decimal Fraction Device').

It is also found that the substantive digits in Colon Classification not only performed simultaneously the function of semantically rich digits and indicator digits, but also their function is interchanged with that of indicator digits. For example the substantive digits 'Small Roman Letters' are used as phase indicator digits and position fixers for speciator kind 2.

Bhattacharrya in one of his recent article has suggested that "the set of digits to be used to represent component idea [e.g. substantive digits] should necessarily by made distinct from the set of digits to be used to represent relationship among the component idea [e.g. Indicator digits] [47]. This distribution of functions among the distinct digits of the primary base has been suggested by him on the basis of "the principle of Unity of Notation, one and only one notational unit for one and only one ordinal unit and one and only one functional unit"[48].

The above new lines of approach suggested by Bhattacharyya is still to be experimented and only time will tell what effeciency it will bring to the notational system of Colon Classification. However, it is felt that there is a need to examine and modify the notational system of Colon Classification, on the basis of suggestion made by Bhattacharyya as well as in the light of other guiding principles for a notational system as laid down by the General Theory of Library Classification, so as to bring it on more sound footing.

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SHORT COMMUNICATION

THE INQUIRER AND THE REFERENCE INTERVIEW

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That the reference librarian must be absolutely clear about the needs of the inquirer before charting the course of search is beyond a shadow of doubt. But what is doubtful is the validity of the widespread belief that the inquirer cannot frame his inquiry in a specific way. Opinion seems to be divided on this vital point. The 'conservative' view, associated with the 'old guard' of librarians, is that the inquirer suffers from an inferiority complex and that stands in his way of posing questions in a clear-cut way. This view was repudiated by the explanation that initially unaware of the capabilities of modern librarians, library users adopted an irritatingly vague general approach. But now, we have come a long way of and therefore we might be unwittingly insulting the intelligence of the inquirer, if we still persist in this outmoded assumption which, in any case, is not borne out by facts to any appreciable degree. There might be a timid few amongst the readers, just as among any other section ot people, not used to the sophisticated ways of modern librarianship who may not, to begin with, frame the inquiry in the way conveniently understood by the library staff. But to generalise on the basis of a negligibly few is to lose sight of the realities.

According to the 'Young Turks' of the 'Progressive View', the inquirer does not hold a good opinion of the librarian. He believes that only the second rate man or woman takes up Librarianship as a career and that they do so not out of love for the profession. It may be observed here that although conditions have changed considerably in the recent past, librarians have failed miserably in their not too well defined public relations endeavour, with the unfortunate result that the image of the profession has not brightened up to the extent commensurate with the change. They are yet to succeed in demonstrating, in a significant way, to the intellectual world, their indispensable role in the process of a scientific investigation as well as in the ultimate material and spiritual advancement of the society - a role which is no less important than that of the scientist. This pathetic failure to measure up to the expectations of the society is the reason why a surgeon, to give an example, in search of information on plastic surgery does not go beyond asking the librarian to merely show him the shelf in the library where books on surgery or, worse still, books on medicine are kept.

A slightly different opinion is expressed by Foskett when he says that the inquirer formulates his question in terms of what he knows about it rather than what he does not know. In his words "when a research worker begins to make a search, he has become aware of a gap in his knowledge that he wants to fill, but he cannot know the extent of his ignorance. The librarian need not be surprised if professional people couch their inquiries in jargon not easily intelligible to him and this certainly is no measure of the inquirer's inability to frame questions in the most specific fashion.

Against this background, let us examine some of the factors involved in influencing the readers' approach to information in a reference situation. The most important of these is the notion held by the library users and exaggerated by the extremists of the 'progressive' school of thought, that the library staff are ignorant of the subjects of their inquiries. The inquirers have never been made to realise that the librarian has developed, over a period of years, an expertise in collecting, evaluating, indexing, locating and finally retrieving information on all subjects without, like the inquirers, getting too deeply involved in any one of them. They never, of couse, pause for a moment to appreciate the fact that know-knowledge of the subject and knowledge about how to get at the right kind of material on it are two different things and that the librarian is trained to do the second job - the job of information retrieval. Therefore, they are content to be directed to the place where books on their subjects are shelved.

Not only do library users not have an idea of the ability of the staff in bibliographical work, but also they are not fully aware of the advantages of library techniques and tools. For instance, readers generally do not know that the classification schemes that libraries adopt bring all the related subjects together on the shelves and material on specific topics follows material on general subjects. Few people know that the catalogue supplements the systematic arrangement of the reading material by the classification scheme with its network of references and analytical and added entries. So, to make people realise the usefulness of these and many other facilities, reader instruction, at school and college level, in library use is necessary and the programme of instruction must include, besides items such as familiarisation with catalogue, a detailed explanation of reference facilities offered by the libraries.

Ability to frame questions specifically is dependent also on the intellectual level of the inquirer. Surely, a child's or an unlettered man's explanation of an intellectual need will not be as clear as that of an adult, experienced and educated person. Of course, by intellectual level is not meant mere possession of degrees of higher education. But certainly advanced learning sharpens one's power of expression.

Equally effective is the knowledge acquired by extensive reading, conversation and mingling with people. By frequent use of the reference facilities of the libraries, a person adds considerably to his power of expression in a pin-pointed way. An intelligent person needs only a few minutes observation of the methods of the reference librarian to master the technique of posing questions to the latter's satisfaction. It is here that the reference librarian's efficient handling comes into full play. He convinces the inqurer of his sincerity and genuine interest in his client's problems. Once he is made to feel at home in the company of the helpful reference librarian, the inquirer's inhibitions, if any at all, are gone and he is ready to come out with his exact needs. There might be a few points that need clarification. But the reference librarian is careful not to create the impression of cross-examining while getting his doubts cleared.

Reference Librarian's intellectual standard also is a decisive factor in a successful reference interview. A wide range of general knowledge and the mental alertness to grasp quickly the needs of his inquirers are the twin invaluable assets for the reference librarian in his day-to-day work. While a good knowledge of the universe of subjects as well as the classification system in use in his library enables him to put at once the subject of inquiry in the right place on the map of knowledge, familiarity with his stock and awareness of the rather peculiar phenomenon of information such as 'scatter' and seepage' aids him to retrieve the required information with the least possible loss of time. When called upon to deal with an inquiry, the subject of which he knows little - which is not infrequent - the confident reference librarian, without getting nervous, skims a paragraph or two on it in a subject dictionary and thus arms himself to tackle the situation. As Papazian puts it "he [the librarian] must be able to understand the question or request, interpret it in the proper context, perform the mental manipulations that will lead to the right sources, find the relevant information and correlate that information into a meaningful unit."

In other words, in the reference interview, two personalities meet - the inquirer's and the reference librarian's - and the result depends on how the two interact on each other. If the inquirer is bossy and does not bother to understand the reference librarian, the reference librarian will not get an exact idea of his domineering client's requirements. However, if the reference librarian is confident, courageous, intelligent and tactful, he will make the inquirer realise that meaningful cooperation from both sides is mutually beneficial. To put it differently, the reference librarian must be in a position to meet the inquirer at a comparable intellectual level. He should, of course, treat the reader with respect and should not try to take advantage of his position, to dominate the situation. The interview must be a purposeful communion of ideas and not a clash of personalities. The result may be either disastrous or productive, depending upon the characters of the people involved.

Readers' awareness of the library facilities vis-a-vis the librarians role is yet another factor that influences the inquirer's approach. Library is an institution created by the community and its raison d'etre is service to its creater. But unfortunately it is caught in the vicious circle of neglect and poor service and this is seen more glaringly in the context of the unprecedented mass of information of the present times. The sight of a busy librarian in an understaffed library, works as a disincentive to the inquirer to approach for help. No wonder, under these circumstances, he just askes to be shown the way. Closely connected to this is the belief that the librarian is there to safeguard books and that he should not be troubled with requests for specific information. Behind this ignorance are seen the last lingering vestiges of the archaic concept of the caretaker librarian of the past.

The type of library and the philosophy of reference service of the individual library also have a bearing, albeit indirect, on the users ways of formulating inquiries. In a busy public library, where circulation of books is accorded more importance, the reader comes across staff just pointing to the direction of the shelves. Such an atmosphere does not encourage the inquirer to approach the staff with his specific needs. In contrast to this is the idea of the maximum reference service in special libraries, where the inquirer finds himself most welcome and that enables him to express his needs freely. A few minutes dialogue crystallises into the most specific topic, however complicated it may have looked at the start. This, of course, is not always true, for, there are public libraries, which although busy, do the maximum reference service, comparable with that in special libraries. It all depends upon the importance that the librarian attaches to the Reference Department in his library.

It is apparent therefore that a number of practical and psychological factors are to be considered in explaining why an inquirer does not formulate his problem in a most specific way. When we examine them in a dispassionate way, we may find it difficult to echo completely Collison when he says that "half the battle in reference and information work is to discover exactly what the reader really wants." Looking at the situation from the inquirer's angle, it is hard to escape the conclusion that the inquirer does not frame his question in a specific way and not that he cannot. But encouraged in the right way by the friendly reference librarian, any inquirer, with average intelligence, will specify his needs readily. The following example will illustrate this point clearly. An inquirer approached the reference desk of a library, one day, with a request for material on 'air pollution'. Requested by the assistant on duty, the inquirer explained immediately that he wanted information on air pollution caused by automobiles. He went away satisfied. A few days later he came to the reference counter with another request. This time he expressed his inquiry in clearest possible terms. To quote him "I want material on the effects on human body of lead in the smoke exhausts." He volunteered to add that lead is added to gasoline to increase its performance. Isn't difficult to imagine a more specific inquiry?

References:

[1] COLLISON, R L Library assistance to readers 5th ed, Crosby & Lockwood. 1965.

[2] FOSKETT, D J Information service in libraries. 2nd ed. Crosby & Lockwood. 1967

[3] KATZ, W A Introduction to reference work Vol. 2: Reference services. McGraw-Hill. 1969

[4] PAPAZIAN, P Librarian, know thyself. RQ, July 1965.

[5] SCHILLER, A R: Reference service: instruction or information. Library Quarterly, January 1965.

INFORMATION RETRIEVAL USING SPLIT QUERY AUTHOR AND VIRTUAL STORAGE

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Library information retrieval is known for sometime now after the advent of the computer. The authorwise retrieval, alphabetization of authors, and subject index are also known. Normally, the author is retrieved by the input of complete author name. The output shows the author name along with other particulars, namely, publisher, title etc. (see also the output in Table 2.). The authors are input in certain alphanumerical format, e.g., A4, A6, A8 etc. and in the case of retrieval of the first author, it presents no difficulty, assuming the author query is input in the same format. The second author query sometimes presents a problem as well as the first author already stored in 16A4 format, and which was used here. Suppose, one wants books by Lawson, and the query is input in A4 format, with "LAWS" in 1A4 and so on there is no difficulty. If the query is in, let us say, 3X, 1A4 format (slight error in input) the query will not match with the stored author information and no hit will occur. Similarly, if one puts "Nielson", the second author as the query, the hit is not made. Because in this case, the format is as follows, in storage.

LAWS, ON A, ND N, IELS, ON ..(1)

and the query format is

NIEL (1A4), SON (2A4) ..(2)

One can see from the above, there is no matching and the hit is not made.

This report presents one method of solving this by split author method in the query, by which one can retrieve 1st, 2nd or 3rd author and so on. As an additional bonus, one can input the query author with less restriction. Some other method [1] is available, but this method seems to work well with latitude in query input, and less stringent input control in the query.

Method

The author data is stored in A4 format. See also the list given in Table 2. The query is input in a random manner, starting with the first letter within first 6 columns. The first four letters of the query author is stored in A4, the 2 to 5 letters of the same author in A4, the 3 to 6, 4 to 7, 5 to 8 etc. The first 4 letters of the query author is compared with successive 4 letters of the complete author list in A4 format. If a hit is made the print out is triggered, otherwise go to step II and compare 2 to 5 of the query with authors' list, as above. The step is repeated by comparing 3 to 6, 4 to 7 etc., with the stored authors' list. When a hit is made the print out is triggered. This method will work irrespective of author-sequence, i.e. whether second or third author is in the query. Table 1 illustrates the sequence of operations.

Table 1 Comparison list.
List contains 'LAWSON AND NIELSON'
Query "NIELSON"

No.		Split author in A4	Compared with	Hit (Yes/No)
I	1.	NIEL	LAWS	NO
	2.	(1-4 of query	ONA	NO
	3.	author)	NDN	NO
	4.		IELS	NO
	5.		ON	NO
II	1.	IELS	LAWS	NO
	2.	(2 to 5 of	ONA	NO
	3.	query author)	NDN	NO
	4.		IELS	YES, (Hit is made)

Now the print out is triggered. The flow sheet of the method is shown in Fig. 1. The query and output listing is shown in Table 2, with also the splitting of the query in A4.

Discussion

The compilation of author query in split A4 format is needed only temporarily and hence a virtual storage in IBM 370/155 was used. The partial listing is shown in Table 2. By the same procedure, shown in Fig. 1 the first author query even if it is input in a random manner, can be retrieved. That provides additional advantage, in the sense, there is latitude in input. On rare occasions, if the A4 format of the query matches with similar 4 letters of the different author, the hit is made. But it is not a drawback, as one will get only more than what he wants. Precautions have been taken to proceed with the next author list if

1. 4 blanks are encountered in the search query.
2. When a format encountered like this occurs in the search query.
3. When a format "son" like this occurs in the search query.

The first two are to save computer time by avoiding comparison without purpose. The third one is to avoid print out of unwanted author with the same last name as the input one, e.g. Dickson and Neilson. Splitting of query author requires an order less core memory compared to the same method being used for the stored list. Hence this method is preferred. But the output, of course, is same. A4 format is suitable and other formats (A6, A8 etc.) will present some problems in retrieving names with 4 letters or less, e.g. Kay, Ray, Dey. The whole programme requires 64K and is written in Fortran IV. The computer used was IBM 370/155 with punched cards input. The virtual storage mode of the computer was used to compile the split query author. The user need punch in only the required author with no other restriction.

The method can be extended to administration and accounts procedures. Whenever combination of data is stored, and want a single data, this method can be used. The simplicity lies in the fact that the input of data and the query input is quite flexible and easy. A blank card denotes the end, avoiding counting operations. The query author, the splitting into various A4 formats, and the search result is shown in Table 2. The last two are second authors. Further details can be had from the author.

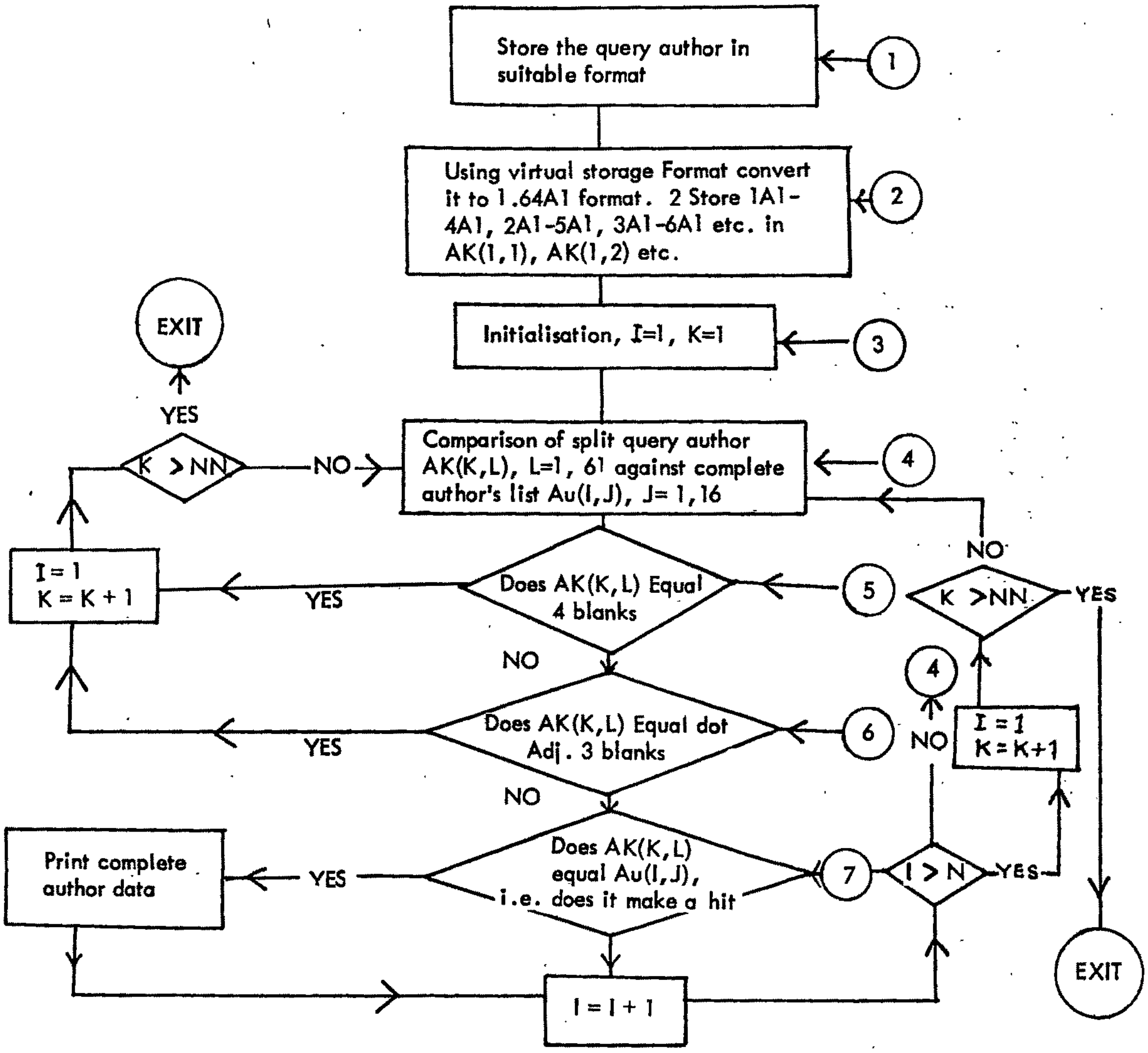
Acknowledgement

The author wishes to thank Dr. G. Venkataraman, Principal Physicist, for encouragement and colleagues for helpful discussions.

Reference

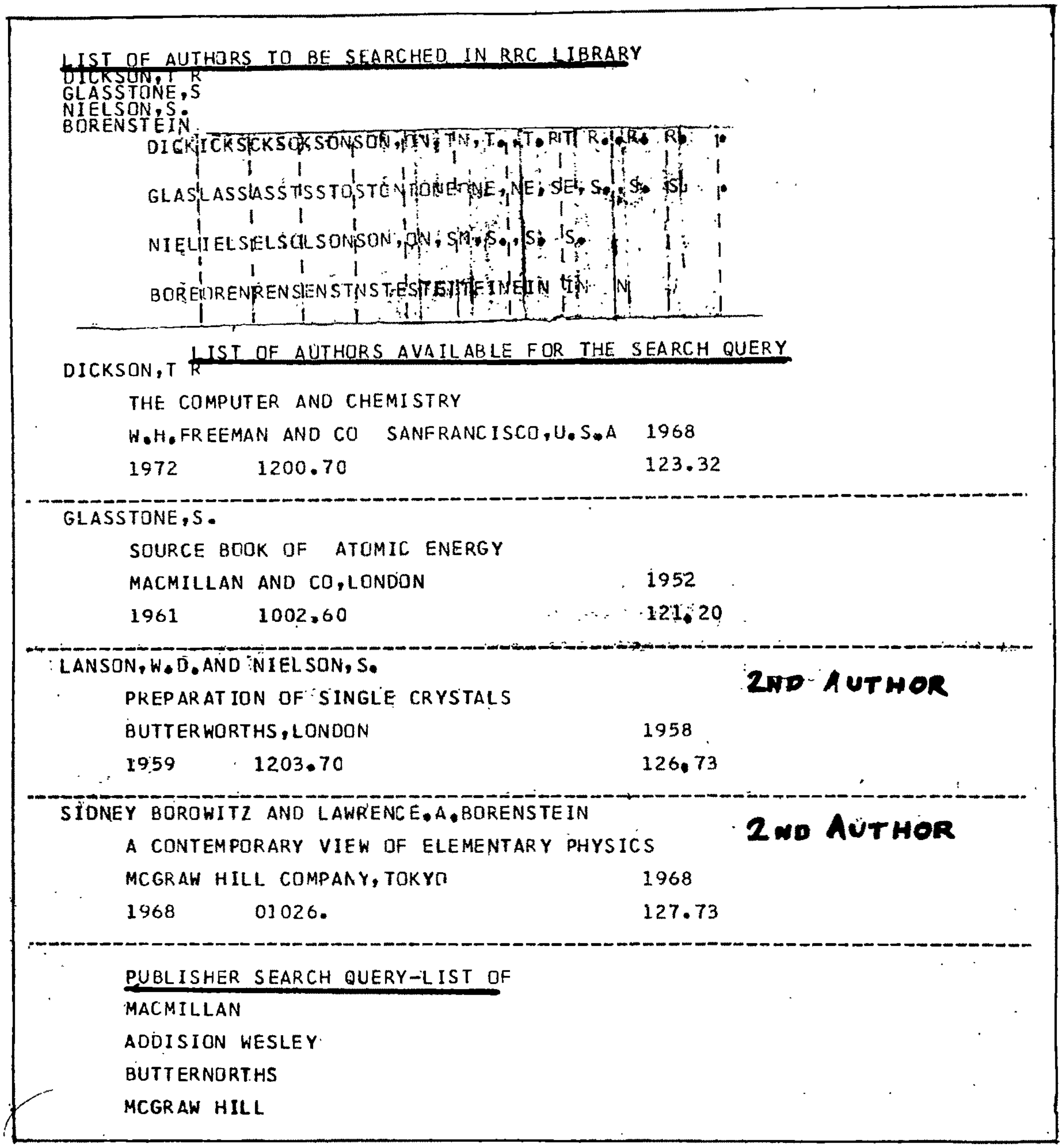
[1] "TEXTPAC", IBM Package Programme, 1974.

Fig.1 FLOW SHEET OF THE METHOD


Store the query author in suitable format
1
Using virtual storage Format convert it to 1.64A1 format. 2 Store 1A1-4A1, 2A1-5A1, 3A1-6A1 etc. in AK(1,1), AK(1,2) etc.
2
Initialisation, I=1, K=1
3
EXIT
YES
K > NN
NO
Comparison of split query author AK(K,L), L=1, 61 against complete author's list Au(I,J), J= 1,16
4
I = 1
K = K + 1
YES
Does AK(K,L) Equal 4 blanks
5
NO
K >NN
YES
NO
Does AK(K,L) Equal dot Adj. 3 blanks
6
4
NO
I = 1
K = K+1
YES
NO
Print complete author data
YES
Does AK(K,L) equal Au(I,J), i.e. does it make a hit
7
I > N
YES
EXIT
I = I + 1

NOTE: Step 3 and below are achieved by 1 outer do loop and 3 inner do loops with conditional statements.
N = no. of authors in the list, NN = no. of authors in the query.

TABLE 2: QUERY AND OUTPUT LISTING



```
LIST OF AUTHORS TO BE SEARCHED IN RRC LIBRARY
DICKSON,T R
GLASSTONE,S
NIELSON,S.
BORENSTEIN
      DICKICKSCKSOKSONSON,TN,TN,T.,T.RT R.R.R. R. .

      GLASLASSASSTSSTOSTONONENE,NE,SE,S.,S. S. .

      NIELIELSELSOLSONSON,ON,SN,S.,S. S.

      BOREORENRENSENSTNSTESTEITEINEIN IN N

        LIST OF AUTHORS AVAILABLE FOR THE SEARCH QUERY
DICKSON,T R
     THE COMPUTER AND CHEMISTRY
     W.H.FREEMAN AND CO   SANFRANCISCO,U.S.A   1968
     1972       1200.70                        123.32
-----------------------------------------------------------------
GLASSTONE,S.
     SOURCE BOOK OF  ATOMIC ENERGY
     MACMILLAN AND CO,LONDON                   1952
     1961       1002,60                        121.20
-----------------------------------------------------------------
LANSON,W.D.AND NIELSON,S.                               2ND AUTHOR
     PREPARATION OF SINGLE CRYSTALS
     BUTTERWORTHS,LONDON                       1958
     1959       1203.70                        126.73
-----------------------------------------------------------------
SIDNEY BOROWITZ AND LAWRENCE.A.BORENSTEIN
     A CONTEMPORARY VIEW OF ELEMENTARY PHYSICS          2ND AUTHOR
     MCGRAW HILL COMPANY,TOKYO                 1968
     1968       01026.                         127.73
-----------------------------------------------------------------

     PUBLISHER SEARCH QUERY-LIST OF
     MACMILLAN
     ADDISION WESLEY
     BUTTERNORTHS
     MCGRAW HILL
```

FOCUS ON UNISIST PROGRAMMES

This is the seventh instalment of this Feature. Report included here is taken from the Unisist Newsletter vol 2 no 4 (1974).

STUDY ON THE PROBLEMS OF ACCESSIBILITY AND DISSEMINATION OF DATA FOR SCIENCE AND TECHNOLOGY

Numeric and quantitative data may be regarded as a "crystallized" presentation of the essence of scientific knowledge in the most accurate form and play as such an ever increasing role in science and technology. Bearing in mind that reliable data is essentially useless if it cannot reach the user in good time and proper form in response to his request, the UNISIST Secretariat charged the Committee on Data for Science and Technology (CODATA) of ICSU to carry out a study on the problems of accessibility and dissemination of data for science and teshnology.

The goal of the study was to give a realistic picture of the situation in the field of the evaluation, compilation and dissemination of reliable data, to analyse existing deficiencies and gaps and to develop recommendations for future action, paying special attention to the needs of developing countries.

The report defines three functions needed to provide accessibility to scientific and technical data:

- data evaluation and compilation service
- data dissemination service
- data referral service.

In ascordance with this subdivision of functions a global scheme or network for dissemination of scientific and technical data is proposed including:

- data evaluation centres
- data dissemination centres
- global data referral centre.

This does not, however, necessarily mean the establishment of three new organizations for each scientific or technical discipline or subject, but calls for the use and expansion of all present facilities.

The basic problem, leading to the necessity of the creation of the Global Referral Centre, is that reliable data compilations, prepared at substantial cost, are in many cases not accessible to users promptly enough to permit their application where needed. In some instances this lack of accessibility is due to the user's ignorance about the existence of the needed compilation; in others, he may be aware of its existence, but does not know how to get it.

Apart from the function of guiding users to the location of data, the Global Referral Centre supplies appropriate information to the local data dissemination centres, so that the latter can provide referral services for the disciplines in their charge.

The recommendations of the report relate to:

- governmental support for data compilation, evaluation and dissemination projects,
- manpower,
- standardization of data presentation,
- assistance to developing countries.

The spectrum of the recommendations related to developing countries is quite large — starting with the proposal to publish a general booklet on the role of data in modern science and technology and finishing with appropriate financial and technical assistance to developing countries to encourage their efforts towards establishing effective mechanisms of data dissemination in their countries.

The study on the problems of accessibility and dissemination of data for science and technology was presented at the first session of the UNISIST Advisory Committee in February 1974 and, in general, met with the approval of the Committee. The Committee's recommendations in relation to the study may be summarized as follows:

- high priority to the establishment of a Global Referral Service,
- high priority to the publication of a general booklet on the role of data,
- supporting strongly the series of recommendations providing support to developing countries.

While noting that the study did not necessarily reflect its point of view, the Committee supported the proposal of the UNISIST Secretariat for a large distribution of the study having in view the importance of stimulating governments and scientific organizations to endorse the programmes for evaluation and dissemination of data. The study, available in English only, has been published as a UNISIST document.

Discussions are also under way with CODATA for undertaking a feasibility study for the creation of a global data referral centre. The study should result in a clear recommendation on whether or not such a centre should be established. If the recommendation is positive, suggestions would be provided on how it should be operated and financed.

BOOK REVIEW

Statewide computing systems, coordinating academic computer planning, ed by Charles Mosmann. New York, Marcel Dekker, 1974. vii, 201p. (Books in library and information science, vol 10). ISBN 0-8247-6253-3 $ 14.75 (Reviewed by B Guha)

The theme of this handsome volume from the Marcel Dekker, which is a comprehensive and frank review of the widespread movement to coordinate and consolidate at the statewide level computing services for education' is rather of localised interest. In the United States the problem appears to be an important aspect of higher educational planning, in fact a widespread movement. In very few countries academic computer planning has assumed such importance or attracted such interest. Surely not so in India. However, it is always better to be on the look out to find out what the most advanced is doing so that the mistakes and the pitfalls can be avoided.

The present volume is the final report of a research project, under the auspices of the EDUCOM, undertaken to find out if there was a massive movement in the creation of statewide computer networks. If so, where did it come from? Who are the leaders? What kinds of systems are being built, and so on. The text begins with an 'Overview' of the question of academic computer planning. Then follows 23 case studies of academic computing systems, written by educational and governmental leaders. Topics include a presentation of alternative models of development.

The EDUCOM Project had actually visualised seven alternative models, ranging from total campus control to total state control. The higher educational institutions responding to the survey questionnaire had indicated that the pattern of their computing facilities has wide variations. All the seven possible organisational models were in operation in one state or the other. The first model i. e., complete campus control, had under it the largest number of institutions. Naturally, the most evident hypothesis would be that no single model of a 'good' solution to the problem is possible. There are many factors that have to be taken into consideration in accepting or rejecting a model in a given situation. The case studies presented in the publication will help in the proper evaluation of the models in the differing contexts of the systems, like the geography, the size and complexity of the educational establishment, organisation, etc. As has been pointed out, "practices possible in Alaska, with one university center and a few two-year colleges, may be impractical in California with more than a hundred institutions".

While presenting the problem discussed in the book and also in urging for a solution the Editor has put it very forcefully. To quote him on this point, "In education as in many other human enterprises today, the computer is the edge of the future. The policies we establish and the relationships and organizations we create and use for computing will affect a growing circle of affairs in the years to come". He further goes on to say, ". . . we have talked for years about resource sharing among colleges and universities, but computing turns out to be the first resource that is both capable of being shared and worth sharing on a large scale. So multicampus computing may become the model for the future development of multicampus education, research, administration, and service".

The publication lives upto the high standard of Marcel Dekker imprint.

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